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Evaluation of the Consolidation of Real Property Maintenance Activities (RPMA) in the U.S. Army Engineer Activity, Capital Area (USAEA,CA), Volume II: Evaluation

by
James Harold Johnson

The U.S. Army Engineer Activity, Capital Area (USAEA,CA) is a test organization for demonstrating the centralization of Real Property Maintenance Activities (RPMA) in the National Capital Region. This report reviews the development and operation of USAEA,CA, evaluates performance of the total organization, and analyzes its functional components, including financial, supply and procurement, information service, and RPMA management. This analysis covers USAEA,CA for its first 8 years of operation (1980-88), during which Phases I and II have been implemented.

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FOREWORD

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EVALUATION OF THE CONSOLIDATION OF REAL PROPERTY MAINTENANCE ACTIVITIES (RPMA) IN THE U.S. ARMY ENGINEER ACTIVITY, CAPITAL AREA (USAEA,CA)

1 INTRODUCTION

Background

A continuing objective of Department of Defense (DOD) policy and guidance is that Real Property Maintenance Activities (RPMA) at military installations in a given geographic area will be consolidated when this action is cost-effective and does not impair the mission. Compared with decentralized RPMA functions, consolidation is seen as providing greater flexibility, stronger production control, better access to some specialized engineering and other types of technical support, dedicated supply, procurement and equipment loan services, and moderate to significant savings. The premise is that centralized RPMA management within a given region can operate with equal or greater effectiveness and can use better methods/resources than an installation or post acting alone.

Before deciding on the application of this concept, the Army decided to test the feasibility of consolidation by creating a model program and monitoring its performance. This effort was directed by the Vice Chief of Staff, Army,¹ and was to include installations within the National Capital Region (NCR). The resulting organization is the U.S. Army Engineer Activity, Capital Area (USAEA,CA), which has been operating since 1980.²

The responsibility for implementing USAEA,CA was assigned to the U.S. Army Corps of Engineers (USACE) and the U.S. Army Military District of Washington (MDW). The function was carefully planned and organized based on a phased implementation approach from a study by the U.S. Army Engineer Studies Center (USAESC). Preconsolidation studies for each installation were to provide the baselines with which the performance of postconsolidation could be compared. A successful consolidation and well sustained operation, as determined by these measurements, would be matters for review by the Steering Committee (SC), a body that determines when a current consolidation phase is acceptable and when it is appropriate to implement the next.

The current developmental plan for USAEA,CA consists of three separate phases:

- Phase I: consolidation of RPMA at MDW and Intelligence and Security Command (INSCOM) installations; test operations under Phase I were conducted between FY81 and FY86.
- Phase II: consolidation of Fort Belvoir, VA, a U.S. Army Training and Doctrine Command (TRADOC) facility; test operations were initiated in FY87 and are continuing.
- Phase III: originally, the consolidation of the Defense Mapping Agency (DMA) and the Walter Reed Medical Facility; this phase has not been implemented.

¹Consolidation of Real Property Maintenance Activities (RPMA) at Army Installations in the Washington, DC Area, Memorandum for Engineer Studies Center from DAEN-FE2B (19 January 1978).

²R. Blackmon, *RPMA Consolidation Activities in the National Capital Region, Vol 1, Main Report*, Technical Report P-156/ADA142150 (U.S. Army Construction Engineering Research Laboratory [USACERL], May 1984).

Objective

The objective of this work is to analyze the achievements and developmental status of USAEA,CA from 1980 through 1988 (Phases I and II) to provide a report that will serve as a:

1. Comprehensive record and analysis of the planning and historical development of the USAEA,CA organization.
2. Source book for the planning of future consolidation projects.

Approach

Information for this study was collected from USAEA,CA documentation and from interviews with personnel involved in the consolidation. The operating features of current and past configurations of USAEA,CA were identified and compared for effectiveness. Of special interest was the program's activation in FY81, Phase I implementation in FY81/82, and Phase II implementation in FY87. Using status reviews from these phases, each of USAEA,CA's functional performance areas was analyzed in terms of the following criteria:

1. Original/current objectives and tasks (if different).
2. Scope and cost indicators of the original plan and the current work.
3. Support structures (configurations) as originally identified and as now exist.
4. Levels of operational changes in RPMA support, including: responsibilities or procedures; manpower levels; and volume of work.
5. Interpreted reasons for these changes, such as: anticipated or planned modifications; upgraded performance standards; and directed or evolutionary changes.
6. Impact of changes on the general operating environment and performance quality (from existing documentation containing Phase I or Phase II observations/measurements).

The analysis included an economic assessment of each functional area. Presentation of dollar values for any year are in FY88 inflated dollars so that a fixed-value dollar comparison can be made. Factors for converting previous-year dollars are based on the Consumer Index; other inflation factors may be more appropriate when quantitative investigations are pursued. The conversion factors used for fiscal year conversions to FY88 dollars are:

<u>Year</u>	<u>Factor</u>	<u>Year</u>	<u>Factor</u>
FY79	1.655	FY84	1.107
FY80	1.397	FY85	1.069
FY81	1.266	FY86	1.045
FY82	1.193	FY87	1.041
FY83	1.155	FY88	1.000

Scope

The statements and evaluations in this report are presented from a USAEA,CA perspective; the identification and presentation of all arguments and viewpoints are outside the scope of this study. In addition, evaluations are based on readily available USAEA,CA sources such as management presentations, quarterly reports, and interviews with division heads.

2 HISTORY AND ACCOMPLISHMENTS OF USAEA,CA

The background, development, and accomplishments to date of USAEA,CA are summarized briefly for readers unfamiliar with this organization. Persons already well versed in the history and benefits of USAEA,CA may wish to go directly to Chapter 3.

Origins and Planning Development

The USAEA,CA idea began to develop formally after a letter to all military services from the Assistant Secretary of Defense in April 1977.³ This communication directed the services to evaluate consolidation of RPMA in the Washington, DC area. Subsequent proposals for developing a centralized RPMA within MDW and for a U.S. Army Engineer Activity in the Capital Area were prepared in accordance with this DOD directive.

Development of the USAEA,CA Concept

In FY77, the U.S. Army Engineer Studies Center (USAESC) was asked to conduct a comprehensive cost/benefit analysis of the possible alternatives for a proposed consolidation of RPMA functions and responsibilities at specified Army installations in the NCR.⁴ The alternatives that USAESC studied included:

1. Different subsets of NCR installations that could be consolidated; for example, one or more installations could be left unconsolidated.

2. Different approaches to the RPMA consolidation; for example, an operating mode might be adopted in which only a few or many RPMA functions would be centralized. The proposed alternatives were compared with a baseline (FY79) method of operation to see if consolidation would be functionally and economically feasible. The USAESC study was completed in June 1978, and concluded that consolidation was feasible for the USAEA,CA-type configuration, with predicted savings of up to 6.7 percent.

The USAESC study also proposed a plan for centralized execution of RPMA on a Continental United States (CONUS)-wide basis under USACE as a way to attain even greater resource savings. This plan assumed extensive RPMA contracting in accordance with Office of Management and Budget (OMB) Circular A-76.⁵ The Army decided to test the essential elements of this plan jointly through the NCR consolidation with USAEA,CA as the responsible organization.

NCR Installation Geometry

The NCR major commands (MACOMs) and installations included in the USAESC study are shown in Figure 1. Of the six commands evaluated, only the first five in the list below were incorporated into the USAEA,CA plan. The Harry Diamond Laboratory under the Army Materiel Command (AMC) was removed from consideration. The six facilities evaluated in the USAESC study were:

1. MDW: Fort Myer (FMY), VA, Fort McNair (MCN), DC, and Cameron Station (CS), VA.

³Memorandum from the Assistant Secretary of Defense for Installations and Logistics (ASD[I&L]), *Consolidation of Real Property Maintenance Activities (RPMA) at Installations in the WDC Area* (4 April 1977).

⁴*Consolidation of RPMA at Army Installations in the Washington, DC Area.*

⁵Office of Management and Budget (OMB) Circular A-76, *Performance of Command Activities* (4 August 1983).

2. INSCOM: Arlington Hall Station (AHS), VA, and Vint Hill Farms Station (VHFS), VA.
3. TRADOC: Fort Belvoir (FTB), VA.
4. U.S. Army Health Services Command (HSC): Walter Reed Army Medical Center (WRAMC), MD.
5. Defense Mapping Agency (DMA): Hydrographic and Topographic Center (DMAH&TC).
6. AMC: Harry Diamond Laboratory.

The USAESC plan called for a three-phased approach. In Phase I, the three MDW posts (Cameron Station, Fort McNair, and Fort Myer), two INSCOM installations (Arlington Hall Station and Vint Hill Farms Station), and DMA were to be consolidated. Fort Belvoir, VA would be consolidated in Phase II--which would require more extensive planning and scheduling than for all the other consolidations combined. In Phase III, the remaining facilities would be consolidated.

Scope of Operations

The scope of USAEA,CA operations was defined as the execution of centralized RPMA management and support at selected NCR installations whether under an in-house or commercial activities (CA) contract mode of operation. Interrelationships with other organizations were to be as shown in Figure 2 with Headquarters (HQ), USAEA,CA structured to match conventional facility engineer (FE) organizations. The management, engineering, and support functions duplicated at each installation were to be centralized at the USAEA,CA headquarters, with maintenance and repair (M&R) to be performed by an onsite Real Property Maintenance Office (RPMO) at each installation or post.

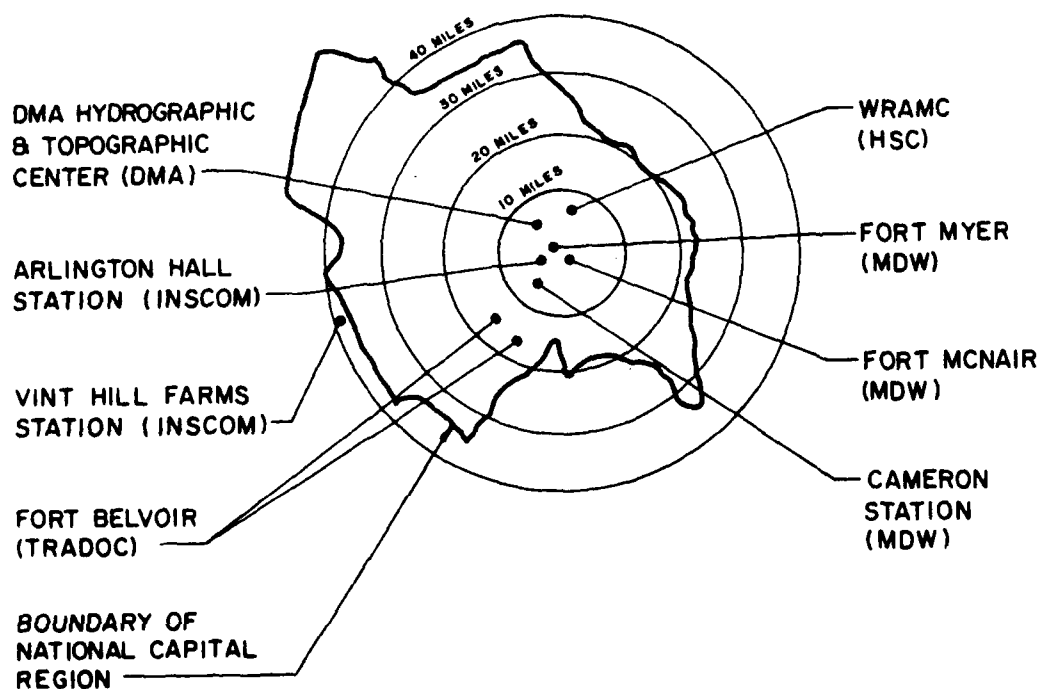


Figure 1. Installations considered for RPMA consolidation in the NCR.

FY 80

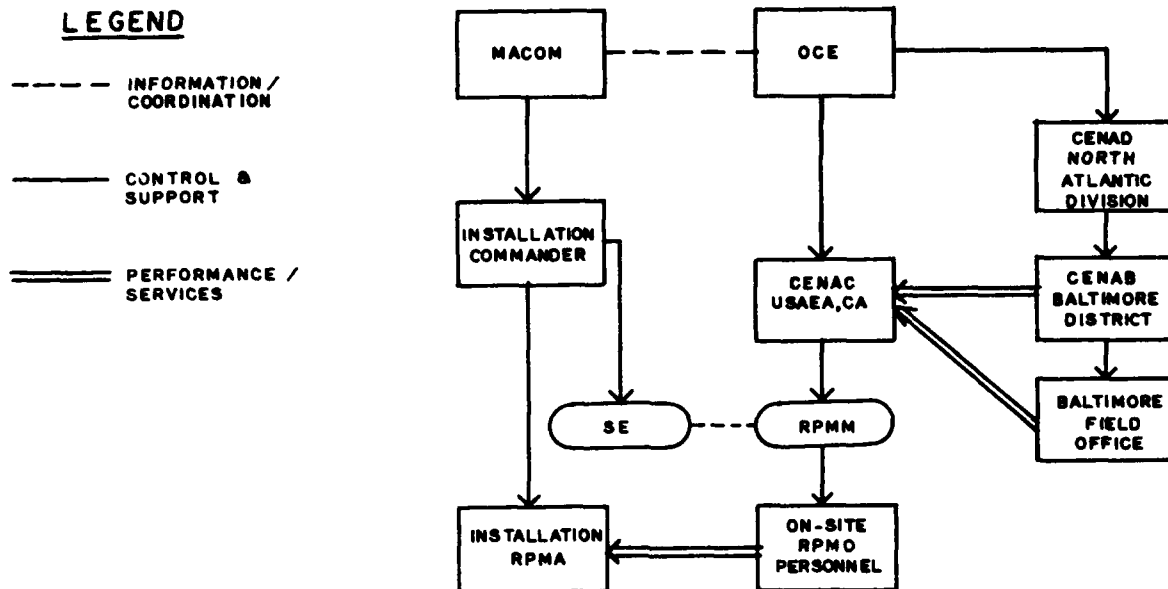


Figure 2. Planned USAEA,CA relationships to other DA organizations, FY80.
(Source: *Installation Staff Engineer Handbook, Draft [USAEA,CA, undated].*)

Developmental Framework of USAEA,CA

The USAEA,CA test organization was structured in accordance with initial guidance (FY80). Over time, some organizational changes have occurred to improve management operations and to facilitate the testing for Phase I and II consolidations. (These changes are described later under *Key Policy Decisions During Development.*) Constraints to this development have included:

The Phased Buildup Approach. For each consolidation startup, the RPMO of the affected post or installation was to be consolidated using existing personnel and practices where possible. Any needed adjustments to conform with consolidation standards (established for USAEA,CA operations) were then to be initiated on a nondisruptive basis.

Testing Concept. The tests were to measure how well USAEA,CA accomplishes each consolidation and how effectively RPMA operations are sustained for an installation after consolidation. After allowing time for "settling in" of procedures at a newly consolidated installation, the phase execution was to be evaluated by USACE, Huntsville Division. The Steering Committee (SC) would then be in a position to determine the success of the phase and whether to proceed to the next consolidation phase.

Timetable. Consolidation schedules were to allow a phased development of the test organization at installations that were selected as satisfying the RPMA centralization goals. Table 1 lists the original CA contracting goals and subsequent changes to these goals resulting from modifications to RPMA operations during the consolidation phase. The table also shows that, after Phase I was determined

Table 1

Original CA Contracting Goals and Subsequent Changes for Consolidation

Installations	CA* Reviews Sched. for:	Status of CA Studies in:		Test Status Through FY88:
		FY82	FY87	
<u>Phase I</u>				
MDW:				
Cameron Station	FY80	Deferred	Deferred	Centralized in-house RPMA; Test eval. shows Phase I is successful.
Fort Myer	FY81	Deferred	Deferred	
Fort McNair	FY81	Deferred	Deferred	
INSCOM:				
Arlington Hall Station	FY80	Deferred	Deferred	In-house RPMA; Phase 1 evaluated as successful. Decommissioning scheduled.
Vint Hill Farms Station	FY81	Contracted RPMA in FY81	New contract awarded FY84	Phase 1 successful; withdrawn from further testing & USAEA,CA support after a MACOM change (FY87)
DMA:				
DMAH&T	FY81	Sched. FY86 Study	Dropped	Withdrawn in FY87
<u>Phase II</u>				
TRADOC:				
Fort Belvoir	FY82	Sched. FY84 SOW	Contr'd in FY85; base-line & CA contract documents in FY86	Evaluating Phase II test results; resoliciting for FFP/ID contract in FY89
<u>Phase III</u>				
HSC:				
Walter Reed	FY83	Sched. FY86 Study	Study incomplete	Undetermined

*CA = Commercial Activities.

to be a success, the SC verified the availability of FY86 baseline data and then scheduled the Phase II consolidation of Fort Belvoir for FY87.

Activation

USAEA,CA advanced from proposal to implementation in FY80 following a directive to the Vice Chief of Staff, Army.⁶ After formation of an Implementation Planning Group (IPG) and the SC, USAEA,CA development moved rapidly. USAEA,CA was activated as an element of the U.S. Army Engineer Division, North Atlantic (CENAD), with headquarters located at Fort McNair. Permanent orders for this new Army agency were issued in May 1980, with activation (and MDW consolidation) following on 1 October 1980.

The general activation/consolidation process, from the command decision and formation of the IPG to the activation and MDW/INSCOM consolidations, was summarized by the IPG in the precedence network diagram shown in Figure 3. Activation of an initial RPMA support organization had to be a well planned process to avoid unwanted precedences and customer disillusionment. USAEA,CA managers' skills were especially tested when coming online as a working organization. However, with effective coordination and cooperation from many persons on the DA staff, the needed funding and initial staffing began to make USAEA,CA an operating organization.

USAEA,CA as a Test Organization

USAEA,CA is to be evaluated after implementing each consolidation phase. Tests for incremental growth and corresponding operations are planned for each consolidation phase as defined previously.

Usefulness of these phased evaluations depends on operation test procedures that can produce data for comparison with the preconsolidation data from approved baseline studies. Such an analysis can provide a comparison between RPMA operations before and after consolidation with USAEA,CA. The phased consolidations of USAEA,CA applied the following implementation plan.

Phase I

The Phase I consolidation test and evaluation were saved from becoming too complex when a freeze on CA evaluation studies for Arlington Hall Station was permitted in FY82. To complete this phase, it was decided that USAEA,CA elements would not undergo the CA study process as this would void the utility of the baseline studies and make rational evaluation impossible.

The Phase I startup was staggered to allow a delayed incorporation of the INSCOM installations. Baseline data were collected for both MDW and INSCOM during FY79, but this task was repeated for VHFS in FY81 after the CA contract mode of RPMA support was established at that installation. Implementation and testing of the Phase Ia consolidation of MDW installations began in FY81; implementation and testing of the Phase Ib consolidation of two INSCOM installations (AHS and VHFS) began in FY82. All consolidations were tested under Phase I requirements and evaluated as successful by the SC in 1984; the test continued through FY87.

⁶Memorandum for the Vice Chief of Staff, Army, *RPMA Centralization and Consolidation in the National Capital Region (NCR)-Decision Memo* (18 December 1979).

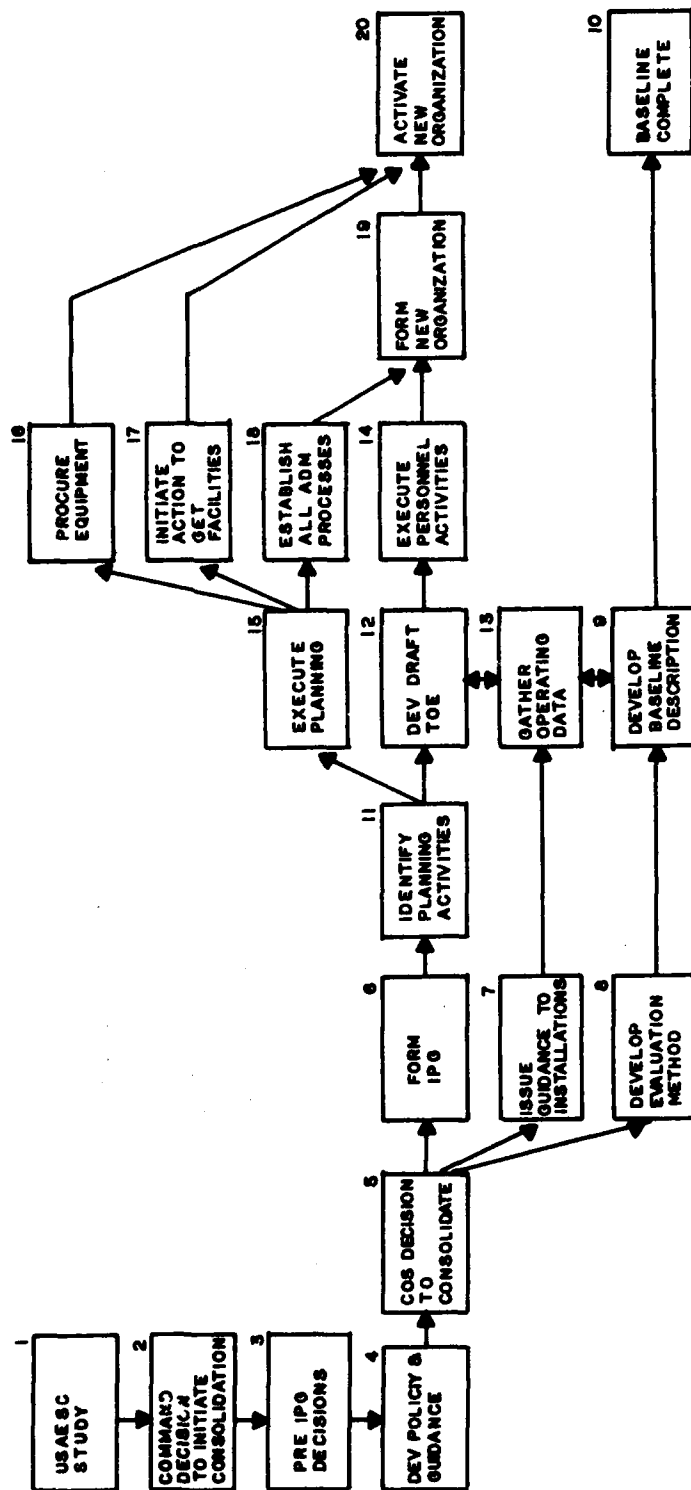


Figure 3. General USAEA, CA activation/consolidation process.

Phase II

Initially, Phase II planning provided for consolidation of FTB in FY84, but command decisions postponed incorporation until FY87. TRADOC was directed to transfer command of the FTB base to MDW (FY88) after the decision to move USAES to Fort Leonard Wood, MO. CA contracting of RPMA was initiated in FY86 and the Fort Belvoir Baseline Study was repeated for the new conditions in that year. Implementation and evaluation testing for the Phase II consolidation of Fort Belvoir began with FY87.

Documentation of the USAEA,CA Record

Preserving the historical record of USAEA,CA as a test organization is important in order to document the project and justify RPMA consolidations to the Department of the Army (DA). It is important that the institutional memory of DA include the influences on USAEA,CA development from concept to tested organization along with the experiences and decisions made, and that this information be documented in one convenient source. The key records generated over the years since the first consolidation are the source of the major events, decisions, and achievements analyzed in this report.

Key Policy Decisions During Development

DA policy decisions and changes in MACOM or installation requirements strongly influenced the developmental direction of USAEA,CA. Key decisions were made to:

1. Develop USAEA,CA as a part of CENAD.
2. Establish the SC as the authority for verifying the success of USAEA,CA consolidation phases and for directing test organization continuance.
3. Give the Commander/Director of USAEA,CA an additional responsibility to serve as Deputy Chief of Staff for Engineering and Housing (DCSEH) for MDW.
4. Charter USAEA,CA as a totally reimbursable organization to be capitalized from the USACE revolving fund.
5. Use extensive support from the USACE Baltimore District (CENAB) in the areas of financial management, procurement, legal services, and CA. This valuable support for USAEA,CA will provide expertise and flexibility not usually available to the conventional installation engineering organization.
6. Defer the MDW and AHS (INSCOM) installations from the CA contracting of RPMA for the duration of the USAEA,CA consolidation test (FY83).
7. Break the "same office" relationship with MDW and physically separate USAEA,CA from DCSEH; the move from Fort McNair was desired to establish identity and to separate programming activities from the execution functions. USAEA,CA headquarters was moved from Fort McNair to Fort Myer in FY85.
8. Remove DMA and VHFS (FY87) from further participation in the USAEA,CA test because of mission or command changes.

These changes are discussed in more detail in Chapter 4.

Operational Decisions

For effective operations planning, sequential consolidations and a manageable buildup were required. In addition, early recognition that planning allowances should be made for operating adjustments and capabilities growth, both in the near- and long-term, shaped USAEA,CA's development. Throughout the development process, management has been alert to the need for flexibility as the organization grows in size and to increased opportunities for new methods and better or alternative resources. The sequence of events and general progress that have impacted USAEA,CA operations planning under Phases I and II consolidations are described below.

Phase I Operations

Upon implementation, USAEA,CA provided RPMA operations for Fort Myer, Fort McNair, and Cameron Station under MDW (FY81), and then for Vint Hill Farms Station and Arlington Hall Station under INSCOM (FY82).

During FY81/82, major refinements of the operating strategies of USAEA,CA were made. First, the annual performance review of each Real Property Maintenance Manager (RPM) in MDW became the corresponding Post Commander's responsibility with the EA,CA Commander as senior rater. Next, USACE services support to USAEA,CA became better defined, with the Baltimore District assuming responsibility for procurement, CA, legal support, contracting, and use of the revolving fund for USAEA,CA operations. Also, a firm decision was made to locate Procurement and Supply operations at Cameron Station and the extended buildup of USAEA,CA Supply Division operations began. A memorandum of understanding (MOU) between USACE, MDW, and INSCOM specified the working relationship with AHS and VHFS.

In FY83, emphasis was on simplifying operations and providing good supply service communications. A DA deferral from the general CA contracting study requirements for MDW and AHS was obtained for the duration of the test. Then, job order receipt and scheduling were transferred from the Operations and Maintenance Division (OMD) to the RPMO of each installation/post. In addition, the Facility Engineer Supply System (FESS) was linked to the Supply Management Division (SMD) of USAEA,CA at CS. SMD served as the test bed for FESS developments.

In FY84/85, USAEA,CA was established as an organization separate from the MDW DCSEH. USAEA,CA moved from Fort McNair to Fort Myer and established separate TDAs to clearly delineate and separate planning and programming functions from execution functions. VHFS was closely supported after encountering a succession of CA contracting difficulties. SMD reorganized to reflect updated methods and accommodate new requirements.

In FY86, MOUs regarding actions to be taken to complete Phase I and implement Phase II were prepared. A contribution was made to an upgrade of the Installation Master Plan at FTB. USAEA,CA initiated actions with BDE's Procurement Division to create an onsite FTB Contracts Office.

Phase II Operations

In FY87, the USAEA,CA RPMA responsibility was doubled by the consolidation of FTB. Changes to the type and extent of Fort Belvoir's CA RPMA contracting were supported by the USAEA,CA managers. Establishment of the FTB EA,CA Procurement Support Branch was completed. Agreements for transferring FTB MACOM responsibility to MDW and for decommissioning AHS were made. Within USAEA,CA, an Information Management Office (IMO) was created, combining the former administrative and automated systems offices.

In FY88, a new emphasis was placed on managerial and business systems excellence; USAEA,CA achievements were acknowledged, but with firm recognition of what still remains to be done. Cooperative efforts to complete a new CA contract for FTB continued through FY88. In addition, a study to develop an Information Systems Plan (ISP) for USAEA,CA was performed.

Major Events and Current Attributes

Table 2 is a chronological list of major USAEA,CA events that identify the planning, organizational, implementation, and operational achievements that have most shaped this test organization. To bring the historical record up to the end of FY88, some current characteristics of USAEA,CA are summarized below.

FY88 Organizational Structure

The current organizational chart for USAEA,CA, as released during the second quarter of FY88, is provided in Figure 4.

Operating Service Goals of USAEA,CA

Customer Satisfaction. As always, customer satisfaction is a primary measure of USAEA,CA success. USAEA,CA customers wish to receive the best possible service at the least cost. USAEA,CA has met its customers' cost concerns with prompt, correct, easily understood billing, reasonable utility charges, and rational overhead costs. Many customer concerns about RPMA support services were addressed in a brochure published and distributed by USAEA,CA headquarters in March 1987.

Important benefits of USAEA,CA support to the customer are:

1. Provides a central point of contact through an organization that knows RPMA.
2. Provides dedicated District support for:
 - Design
 - Procurement
 - Construction.
3. Relieves typical RPMA monitoring burdens, providing more time for the customer's mission.
4. Provides a continuity of funding services through use of the USACE revolving fund, avoiding delays from year-end moratoriums on the release of contracts.

High customer satisfaction is the result of effective service, a considerate customer interface, clear instructions, and good public relations.

A Continually Improved RPMA Service. The Divisions and Offices shown in Figure 4 have contributed to USAEA,CA development as follows:

1. Updated methods--better procedures, enhanced by automated systems, have shortened response times and reduced error rates. The IMO development of automatic data processing (ADP) systems has

Table 2

Major Events in the Planning, Organization, and Development of
USAEA,CA, FY77 to FY88*

FY77
NCR RPMA concept developed.

FY78
USAESC studies performed.

Commanders directed to
consider NCR RPMA plan.

FY79
CONUS-wide plan developed;
NCR RPMA concept approved.

USACE plan for centralization
released.

Select committee identified
options.

FY80
Charter Letter
USAEA,CA activated.

IPG activated at Fort McNair.
Steering Committee first
meeting held (SCM-1).
Army agency status for EACA;
Baltimore District (BDE)
Procurement, and USAEA,CA
supply planned.

----- PHASE I -----

FY81
USAEA,CA activated;
P&S setup at Cameron Station.
SCM-3 and -4; assumed recurring
maintenance program.
Family Housing supply
transferred to SMD.

Study Advisory Group (SAG)
directed baseline study.

USACE acquisition plan for FTB.
Decision to place RPMs at MDW
posts under the rating authority
of the Post Commander.

FY82
Consolidation of INSCOM;
AHS/VHFS start Phase I test;
AHS workforce reorganized.
BDE services established.
SCM-5: consolidation study for
FTB; ASO established; Materials
Coordinator moved to SMD.

FY83
OMD sent Work Recep. and P/E
functions to RPMOs. CA Study defer-
ment for MDW and AHS installations.
ADP upgraded; SCM-6 and -7: VHFS
status reviewed. FESS linked to IFS.

FY84
NCR postconsolidation studies;
SMD study; reorg. of SMD. VHFS
selected second CA contractor.
SCM-8: postponed FTB consolidation;
DMA also postponed.

FY85
Separation of EA,CA and MDW DCSEH;
HQ move started, Fort McNair to
Fort Myer. ECD and SMD updated;
SCM-9; maint. change (MDW rpt);
RPMO AR 15-6 investigation.

FY86
MG Kem ltr & MOU reference
MDW/INSCOM/USAEA,CA. SCM-10;
MOUs on RPMA and Master Plan for
FTB. VHFS selected third CA contractor.

----- PHASE II -----

FY87
FTB/EA,CA consolidated;
BDE Procurement Ofc. at FTB.

IMO created from ASO and Admin Office.
Dev. AHS Transition Plan developed.
VHFS/DMAH&TC withdrawn.

FY88
Second FTB CA Contract and USAEA,CA ISP
study developed.

*Source: USAEA,CA HQ (Special Assistant's Office).

STAFF MEMBER FUNCTIONS

- ANNUAL WORK PLAN
- ACCOUNTABILITY FOR ALL
- PROPERTY
- EMERGENCY PROTOCOLS (FIRE, ALARMS)
- DISCIPLINARIAN PROGRAM
- STUDENT MANAGEMENT
- INSTALLATIONS AND REPAIR
- PROBLEMS & COMPLAINT
- MAINTENANCE PLANNING
- UTILIZATION SUMMARY
- PLANNING
- SPACE UTILIZATION

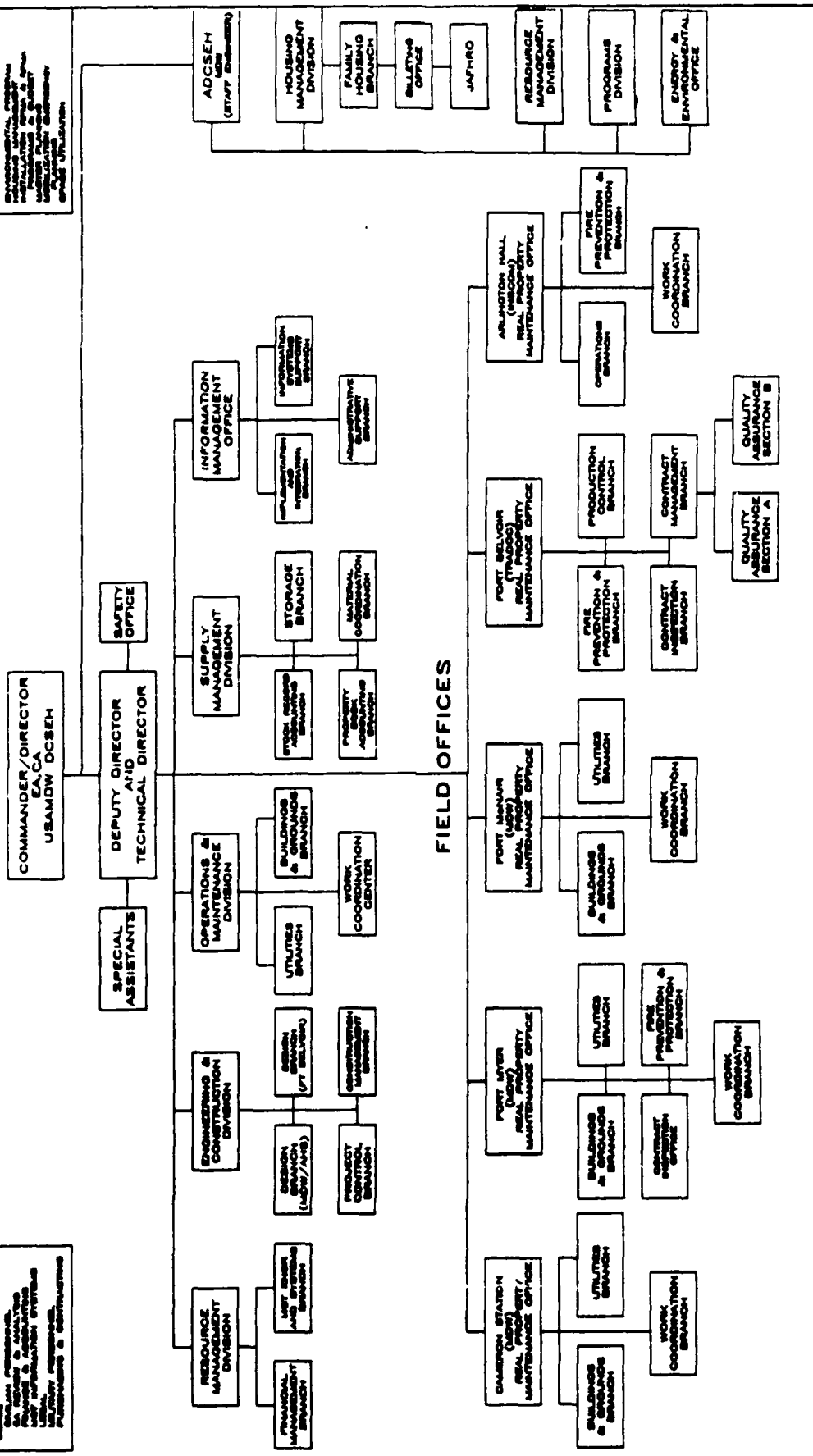


Figure 4. USAEA,CA organizational chart as of Second Quarter FY88.

allowed more responsive procedures by USAEA,CA headquarters and by each RPMO, resulting in timely USAEA,CA products.

2. Quality design--good design services satisfy the customer needs with correct, understandable, and cost-effective plans in a reasonable timeframe. These services have been provided by the Engineer and Construction Division (ECD) in coordination with the Baltimore and Norfolk District Engineers.

3. RPMA management--USAEA,CA services include Resource Management Division (RMD) schedule and funds control, ECD/RPMO points of contact with appropriate reviews or conferences, contract scope clarifications and enforcement, change-order management, general documentation and reports preparation, and project closeouts or transfers with warranty follow-ups when needed.

4. Operations and maintenance (O&M) management--OMD provides professional and staff supervisory guidance and technical assistance for Buildings and Grounds, the Pest Management Program, industrial hygiene, energy monitoring, equipment management, and utilities operation, maintenance, and repair. OMD also provides the centralized Service Order Reception Center for USAEA,CA customers, monitors Work Order/Service Order productivity, provides backup services to the RPMOs, and conducts special operations studies when required.

5. Supply management--SMD has solved many vexing RPMA materials delivery problems for USAEA,CA; SMD normally coordinates with BDE Procurement to acquire, store, monitor, and deliver all needed RPMA or operations materials within USAEA,CA.

Overall Accomplishments of USAEA,CA to Date

USAEA,CA is a unique development within DA and is the first centralized RPMA success in DOD. USAEA,CA's achievements are due to the dedication of its people and their belief in the EA,CA concept. A strong base for these achievements has been the natural advantages of this type of organization, and the support services provided by the USACE. An underlying advantage to USAEA,CA operations is that of size. The large size of a consolidated USAEA,CA permits greater management flexibility and personnel specialization than is possible with an unconsolidated RPMA operation.

Organizational Flexibility

The diversity and superiority of USAEA,CA's capabilities allow uncommon flexibility in responding to special tasks and new situations. The ability to interact effectively with other organizations and to assemble special in-house teams to meet the needs of major organizational tasks has been a hallmark of USAEA,CA operations. Examples are described below.

District Support Service Interactions. USAEA,CA has cooperated with the Baltimore District in developing organization and RPMA operations planning for FTB, including:

1. Evaluation of several CA contract types that would be more equitable to the Government. USAEA,CA refined the plan for a firm-fixed-price/indefinite delivery (FFP/ID) contract for this purpose.
2. Preparation of the CA contract acquisition plan.
3. Development of an administrative plan for the CA RPMA services contract at FTB.
4. Development of a source selection evaluation plan.

5. Development of contract billing procedures.

6. Development of Performance Evaluation Board procedures for a Cost Plus Award Fee (CPAF) contract determination, which included an award fee plan.

Response to the Unforeseen

1. USAEA,CA promptly reactivated an in-house VHFS workforce after a CA RPMA services contract ended and could not be renewed. Here, the RPMA services were performed until a follow-on contract could be awarded. Later, USAEA,CA developed and implemented a replacement FFP CA contract at VHFS as follow-on to nonrenewal of the second RPMA contract.

Application of New Developments

The origination/implementation of many new developments has been facilitated by USAEA,CA's specialized personnel and by farsighted management.

Automated Systems. USAEA,CA has developed and implemented automated systems and electronic support for functional operations, recordkeeping, and documentation, including:

1. An interactive ADP system for RPMA administration, financial management, work management, and project control.

2. An electronic funds transfer system.

Operations Support Packages. USAEA,CA has implemented the state of the art in RPMA operations support systems, including:

1. The Pavement Maintenance Management System (PAVER), an efficient management planning tool developed at USACERL for determining a pavement's status and the probable repair needs for most road inspection conditions; USAEA,CA was one of the first agencies to implement PAVER.⁷

2. The Facility Engineer Job Estimating (FEJE) system, first applied to maintenance and repair estimating by OMD.

3. A centralized Energy Management Control System (EMCS), which is being applied for the first time to multiple installation situations by USAEA,CA.

Innovations

USAEA,CA has addressed several RPMA problems by applying new and innovative solutions, as summarized below.

Internal Operating Documentation. An *Operations and Work Management Manual* was released in May 1986 and provided to both EA,CA employees and customers.

Customer Assistance Documentation. A customer brochure for real property maintenance management was issued March 1987. In addition, a Pictorial Supply Catalog was issued by USAEA,CA/BDE in August 1988.

⁷M. Y. Shahin, M. I. Darter, and S. D. Kohn, *Development of a Pavement Maintenance Management System*, Technical Report C-76/ADA048884 (USACERL, November 1976).

Support to Family Housing Facilities. To support Family Housing, USAEA,CA:

1. Developed a Radon Survey Plan and became the first agency in DOD to implement a measurement method; the plan was applied in Army Family Housing and other priority areas at Forts Myer and McNair.
2. Retrofitted a new Fast Response Automatic Sprinkler System to the existing facilities of MDW/AHS; this was the first such retrofit in DOD.

3 ORGANIZATIONAL PLANNING AND CONSOLIDATION TEST PREPARATIONS

The USAEA,CA test organization has been shaped by IPG planning, skillful management, and the lessons learned from activation, consolidation, and operating experience. Initially, interagency agreements within USACE plus the IPG plan regulated USAEA,CA development; over time, the SC's evaluations and operations planning and the adjustments made by USAEA,CA management have also contributed to this development. The planning and development of USAEA,CA are evaluated in this chapter to show the impact of operating realities on the structure and implementation process of this organization.

Functional Concept

USAEA,CA was planned as an organization that would demonstrate the feasibility of providing cost-effective RPMA services to selected NCR installations in a consolidated resources environment, while operating on a reimbursable basis independently of installation control. The USAEA,CA plan originally specified centralized RPMA management and support for selected installations in the NCR, whether under an in-house or a CA contract mode of operation. The organization itself was to be structured parallel to the conventional DEH organization as specified in AR 5-3,⁸ with management, engineering, and general operational functions centralized at HQ, USAEA,CA.

Installation and RPMO Relationships

In the original concept, each installation/post would retain a Staff Engineer to handle any residual engineer staff functions. Onsite USAEA,CA RPMO personnel were to be managed by a resident RPMM, who would act as the primary point of contact for USAEA,CA in interfacing with the installation/post Staff Engineer being served. The Staff Engineer, working through his or her own command chain, was to be responsible for completing all RPMA through the RPMM. Figure 5 shows the intended relationship between the installation/post Staff Engineer and the onsite RPMM of USAEA,CA.⁹

The Functional Configuration

Upon consolidation, a "slice" of management personnel was to be transferred from the RPMA support branch of each installation or post to an appropriate location in USAEA,CA and/or other supporting organizations. To sustain the performance of in-house RPMA, the services of existing onsite craft shops and shop personnel were needed, and therefore, upon consolidation, the existing RPMOs of each post/installation were transferred into USAEA,CA. In all possible cases, personnel in the DEH of a consolidated installation or in organizations that supported these DEH activities were transferred into USAEA,CA.

⁸Army Regulation (AR) 5-3, *Installation Management and Organization* (HQDA, 10 November 1986).

⁹*Engineer Staff Engineer Handbook*, and R. Blackmon.

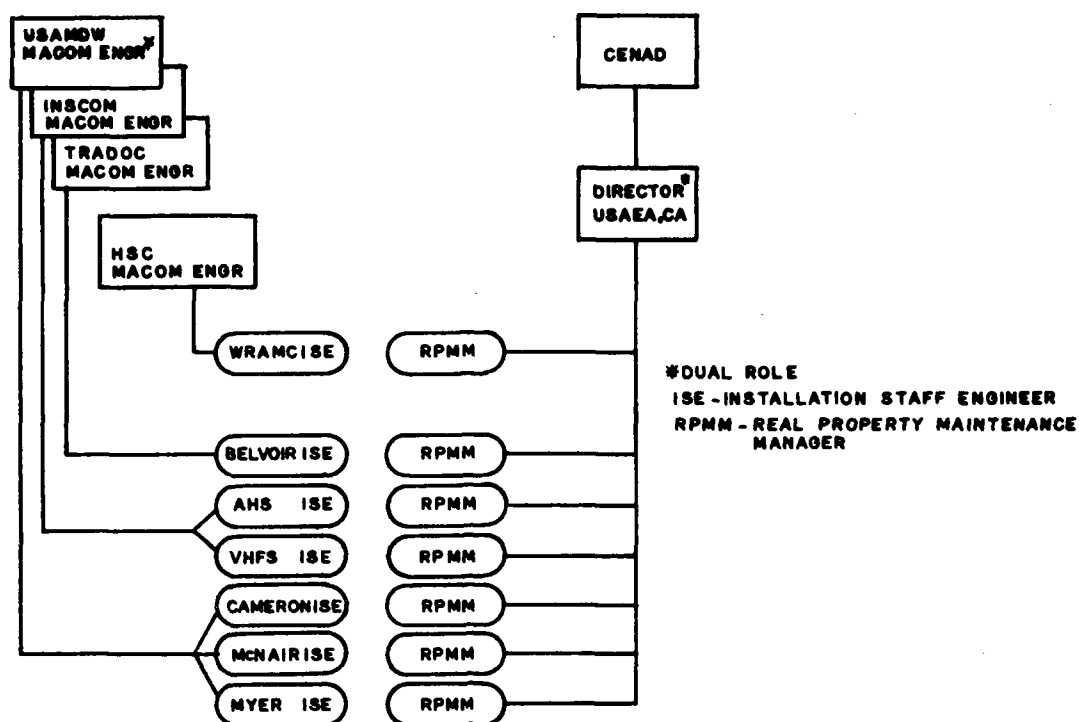


Figure 5. Staff engineer/RPMM relationships.

Projected Benefits of USAEA,CA

Benefits originally identified for the USAEA,CA concept, plus those known from operational experience, include:

1. Availability of USACE dedicated support. District funding, contracting, procurement, and engineering backup services, as well as USACE personnel services, are provided to USAEA,CA.
2. Use of the revolving account. Money for an approved project is readily available through an advance to USAEA,CA from the Baltimore District in the form of a revolving fund; this fund is reimbursed when the customer is billed for the services rendered and payment is received.
3. Cost visibility. True costs of RPMA services for each customer at all USAEA,CA posts/installations are now determined for billing purposes; these records allow a cost visibility not previously available for each RPMA job.
4. Greater employee support and retention. The level of expertise is greater in USAEA,CA than in a decentralized RPMA because the opportunities and resources for specialized support are better; furthermore, staff continuity is sustained more often because upward mobility to higher grades is possible in this larger organization.
5. Support services flexibility. Manpower and equipment resources can be transferred more readily between locations under USAEA,CA than is true for similar transfer across DEH lines of command; this arrangement has allowed a quick response in the event of problems or a change in status for particular installations.

Basic Operations Planning

For startup, USAEA,CA was to be modeled directly from the IPG preactivation plan and was to be principally staffed by personnel transferred from the DCSEH organization of MDW. (For detailed discussions of the IPG plan for USAEA,CA, see USACERL Technical Report P-156.)

IPG's planning required precise forecasts of manpower requirements for the USAEA,CA test organization. The structure, staffing, best procedural development paths, and responsibility assignments also required special IPG attention.

Phase I Structure

Figure 6 is a simplified organizational chart showing the structure proposed by the IPG for USAEA,CA activation and Phase I development. This chart shows that IPG planning in FY80 identified a need for five USAEA,CA divisions and six field RPMOs.

This finding was based on DA support commitments that:

1. MDW would provide interim startup support plus communication and transportation services.
2. District support would be provided to include:
 - Alternative engineering and design sources (Baltimore and Norfolk)
 - Purchasing and contracting (Baltimore)
 - Finance and accounting (Baltimore)
 - Legal (Baltimore)
 - CA reviews and analysis (Baltimore)
 - Payroll support (Omaha).
3. HQUSACE would provide civilian personnel services and management, and assign military staff to USAEA,CA.

Phase II Structure

The USAEA,CA organizational structure developed for Phase I continued to support the added Phase II responsibilities for Fort Belvoir then planned for FY83; Figure 7 shows the actual USAEA,CA organizational chart for Phase II test year FY87. Notable changes were the establishment of the Information Management Office and incorporation of the Fort Belvoir RPMO, and elimination of the planning for RRMO service to the DMA.

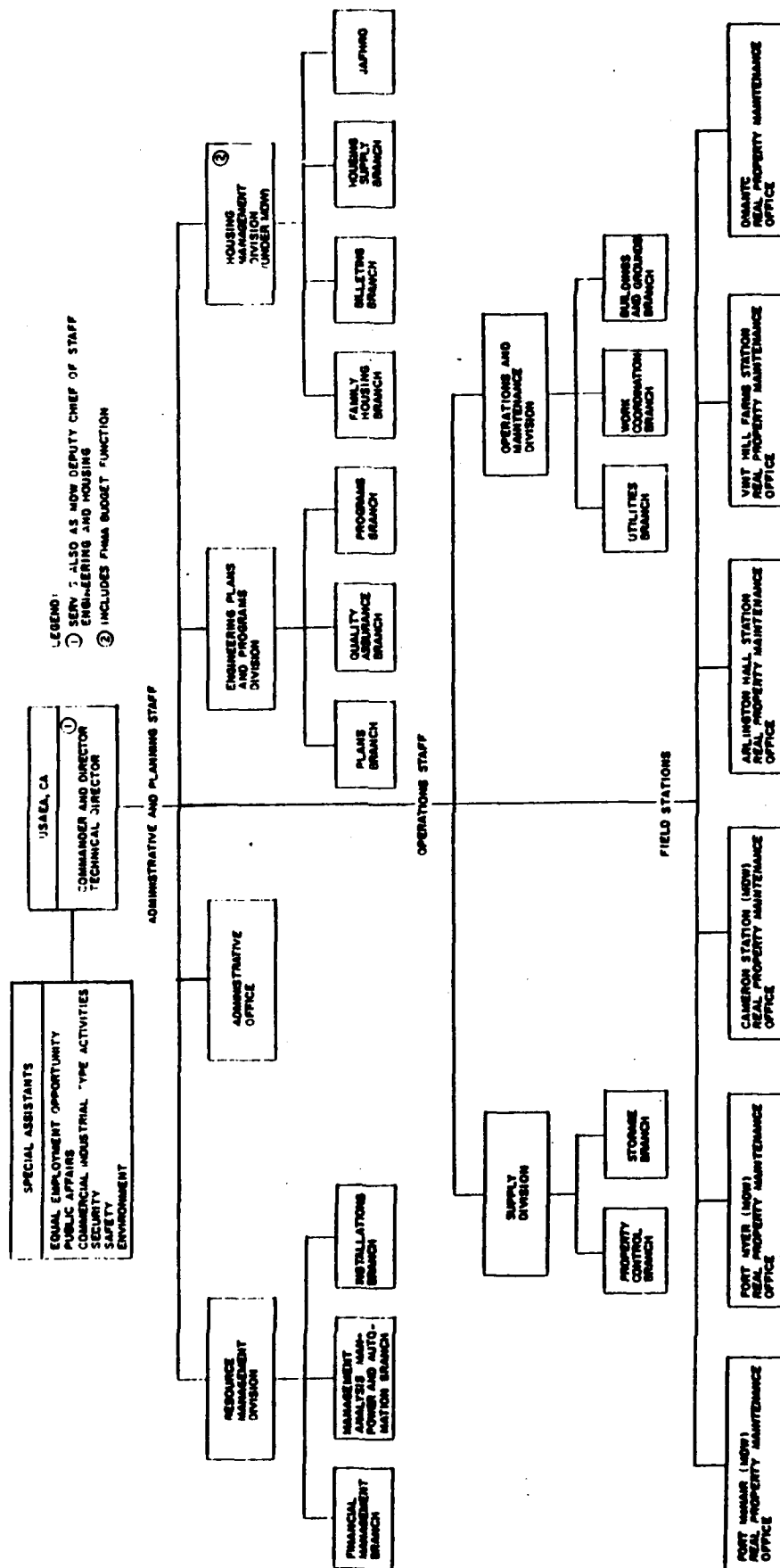


Figure 6. Projected FY81 USAEA,CA organizational chart from the FY80 plan.

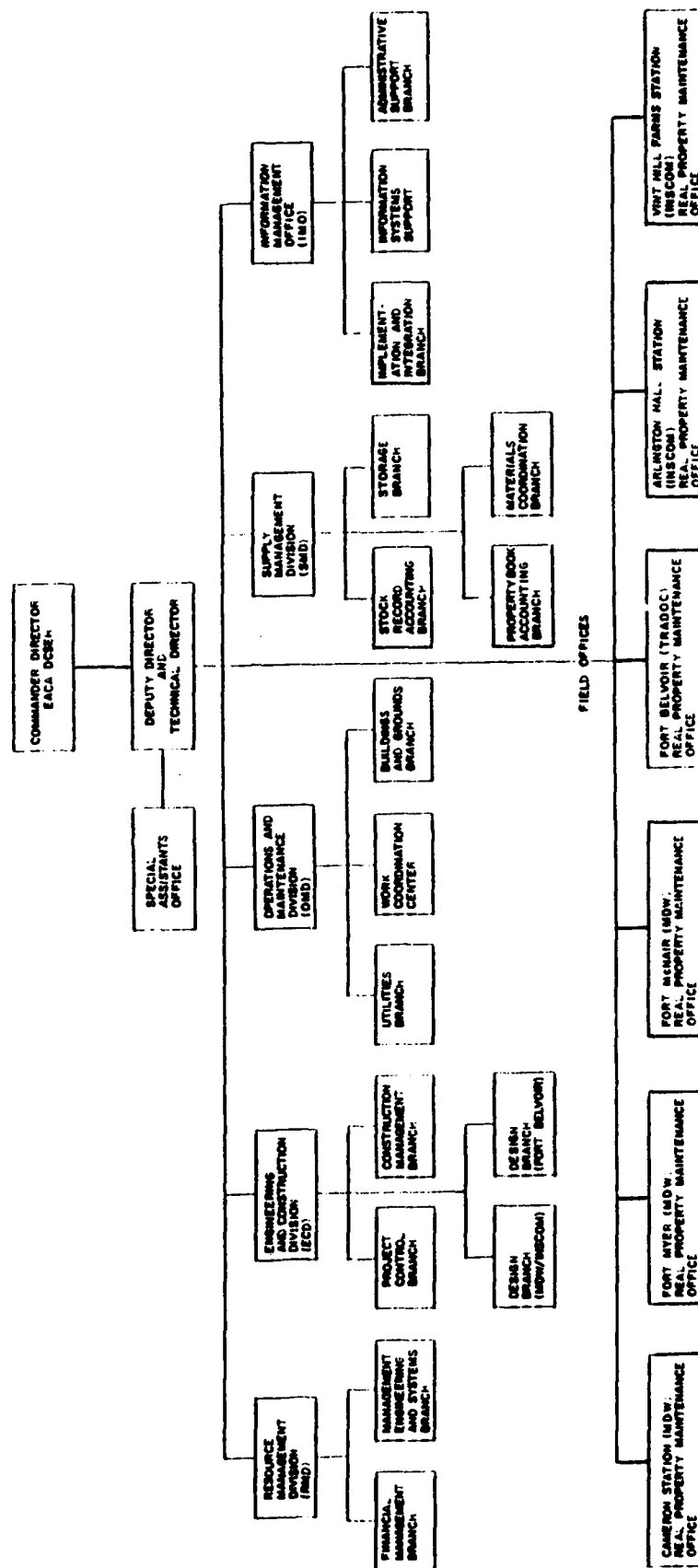


Figure 7. USAEA,CA organization supporting Phase I (FY86) and Phase II (FY87) consolidations.

Staffing

Basic guidance for staffing USAEA,CA was developed by modifying the in-house FE staffing guidance and from workload analysis per DA Pamphlet 570-551.¹⁰ IPG projections of USAEA,CA staffing needs for each of the consolidation phases are reflected in the FY81 Table of Distribution and Allowances (TDA), which shows the number of TDA slots estimated (Table 3). The near-term implementation of Phase II did not occur at the early date of the IPG plan, but the required order of magnitude for the number of personnel needed was correct.

IPG Operations Planning

The preactivation planning for USAEA,CA was for a full-scale startup in FY81 (with backup from MDW if needed) and monitoring as part of the Phase I consolidation evaluation and test program. Support services were available from the Office of the Chief of Engineers (OCE) for personnel (hiring) management, and from BDE for revolving fund and contracting/procurement services as well as engineer support (for large designs); Norfolk District was to supplement the BDE engineer support.

Responsibilities for the MDW commander, OCE, and the installation commander were initially defined in an MOU and later in mission documentation to permit an orderly USAEA,CA startup.¹¹ These responsibilities are listed in Table 4.

In the planning phase, IPG recognized that automated systems would be necessary to a centralized RPMA support organization. USAEA,CA's large-scale operations would make special software development cost-effective while complexities would encourage a broad base to the software design (with the possibility of wider use in USACE). Although ADP was considered a key element in developing an efficient USAEA,CA, the rapid new product development in FY80 in the industry made long-term planning in this area very uncertain. No real-time systems suitable for in-house processing of RPMA data were available at this time, so development of such systems originated in the Automated Systems Office (ASO) of USAEA,CA during FY82. USACE and U.S. Army Management System Support Agency (USAMSSA) software support and a strong in-house development effort have met the current automation needs of centralized RPMA for USAEA,CA.

Preparations for Consolidation Testing

Before the SC would approve RPMA consolidation for an installation, a Study Advisory Group (SAG) had to verify that a valid baseline existed for that installation. SAG also had to verify that a clear USAEA,CA plan for accommodating the new responsibilities of the consolidation had been formulated.

Baseline Studies

Baseline studies were developed by SAG for each consolidation. Values in the baseline report were used to establish the RPMA performance before the consolidation for each installation. The

¹⁰ DA Pamphlet 570-551, *Staffing Guide for U.S. Army Garrisons* (HQDA, 21 January 1942).

¹¹ *Organization, Mission and Functions [for] USAEA,CA*, 4th revision, Draft (USAEA,CA, 17 March 1988).

Table 3

**USAEA,CA Table of Distribution and Allowances (TDA)
From IPG Projection, FY80**

Activity	MDW EA,CA Ph Ia FY81	VHFS AHS Ph Ib FY82	Total Phase I FY82	Fort Belvoir Ph II (FY87)	Total Phase II (FY87)
A. USAEA,CA					
1. <u>Staff</u>					
Req.	180	11	191	41	232
Auth.	139	9	148	35	183
2. <u>Field</u>					
Req.	371	200	571	376	947
Auth.	292	168	460	243	703
3. <u>Total EA,CA</u>					
Req.	551	211	762	417	1179
Auth.	431	177	608	278	886
B. Installation Staff Engineer (ISE)					
1. <u>Staff</u>					
Req.	21	16	37	12	49
Auth.	14	16	30	12	42
2. <u>Housing Mgt.</u>					
Req.	44	8	52	28	80
Auth.	42	7	49	26	75
3. <u>Total Staff</u>					
Req.	65*	24	89	40	129
Auth.	56*	23	79	38	117
C. Other					
Req.	0*	8	8	53	61
Auth.	0	2	2	33	35
D. Total TDA					
Req.	616	243	859	510	1369
Auth.	487	202	689	349	1038

*Dual hat--add to staff totals.

Table 4

Key Responsibilities for USAEA,CA Activation

The Commander, Military District of Washington:

- Provide the NCR RPMA Director with the necessary funding for RPMA, Family Housing Management Account (FHMA), and bachelor housing services for MDW.
- Provide administrative support to the NCR RPMA organization.
- Provide--through the NCR RPMA Director--on a reimbursable basis, RPMA services to be required by the commanders of AHS, VHFS, FTB, DMAH&TC & WRMAC per implementation plans.
- Execute the Officer Evaluation Report for the Director, NCR RPMA, as a rater in accordance with AR 623-105.*

The Chief of Engineers (OCE):

- Designate a reviewing official for the Director, NCR RPMA, from the USACE command chain in accordance with AR 623-105.
- Maintain, through the USACE Division/District structure, the TDA for the NCR RPMA organization.
- Provide, through the USACE Division/District structure, all contracting/purchasing support to the NCR RPMA organization. The NCR RPMA Director will receive Resident Contracting Officer authority.
- Perform, through the USACE Division/District structure, CA contracting reviews and analyses.
- Conduct a baseline analysis of present RPMA services and measure effectiveness at installations involved.
- Develop a methodology for evaluating the efficiency and effectiveness of the NCR RPMA implementation phases.

Post/Installation Commanders:
(after consolidation)

- Retain a residual engineer capability (installation Staff Engineer) to perform DEH and other staff functions.
- Plan, program, and budget for RPMA, and determine and approve RPMA requirements.
- Reimburse the NCR RPMA organization for services provided.
- Transfer an appropriate number of RPMA spaces to the NCR RPMA and supporting organizations when RPMA functions are transferred.

*AR 623-105, *Officer Evaluation Reporting System* (HQDA, 15 November 1981).

comparison of these values before and after consolidation is the measure of success for the organization. Evaluation areas developed for the Phase I consolidation included the following:

1. USAEA,CA response to the requirements/needs of:
 - Post commanders
 - Housing residents
 - Routine maintenance
 - Self-Help Program.
2. Assessment of the caliber of USAEA,CA staff in:
 - Experience
 - Motivation
 - Productivity.
3. Support of interface agencies:
 - OCE--RPMA consolidations test; personnel
 - BDE--Finance and Accounting (F&A)/design/contracting/legal
 - MDW--Startup support; HMD management
4. ADP support levels available:
 - Data maintenance
 - Cost/accounting systems
 - Job status/tracking system
 - Communications.
5. Engineer planning and programming.
6. Resources management.
7. Supply/procurement procedures:
 - Quality of supply/procurement services
 - Number of personnel

- Related supply/procurement delays
 - Timeliness of supply/procurement services.
8. Maintenance and supply equipment:
- Repair and maintenance
 - Usage.

Implementation Strategies

The IPG plan and modifications by USAEA,CA management resulted in a relatively smooth transition. This experience can be used by other groups in initiating an RPMA consolidation.

Activation and Phase I Consolidation Strategy

Overall Startup Plan. The full-scale USAEA,CA activation and MDW consolidation (Phase Ia) was to occur on 1 October 1980, with consolidation of the INSCOM installations to follow 1 year later (Phase Ib). Initially, some organizational and operations assistance were to be provided by MDW, with the more long-term support to be provided by USACE and BDE. A degree of managerial adaptability was required to translate IPG plans into this double-start consolidation.

Guidance and Monitoring. Creation of the SC/SAG/IPG planning and guidance groups was essential for handling the complex tasks involved in implementing the RPMA concept for NCR. In compliance with the Charter Letter, the IPG was formed at Fort McNair on 2 January 1980, with a charge to complete work needed to consolidate the FE functions in MDW by 1 October 1980. A common denominator in this process was the USAEA,CA Commander/Director who, as chairman of the IPG, was responsible for USAEA,CA planning and implementation as developed by the group. The IPG formed into specialization teams to address specific planning tasks; documentation for these tasks is identified in Appendix A. The SC was chaired by the Commander of MDW; SC scheduled periodic meetings to monitor USAEA,CA progress and to provide status reviews and overall direction to future developments.

Staffing for the Phase I Consolidation. Knowledgeable, experienced people were recognized as the key to effective implementation and success of USAEA,CA. A study was done to identify all positions and workloads related to DEH activities in the RPMA organizations at the installations to be supported. This study was instrumental in ensuring that experienced personnel were selected, which provided for a smooth startup period.

Personnel waivers and TDA modifications altered the planned TDA shown in Figure 6 because of the following conditions:

1. Manpower transfer: the direct transfer of all FEs in MDW to USAEA,CA was required if the FE function was to be transferred (400 transfers were expected). The problem was to ensure that consolidation did not reduce the level of responsiveness for services to be provided at each installation by the in-house workforce. With the regional RPMA consolidation concept, a direct labor force serving each installation was expected to be basically the same as in the baseline MDW organization.

2. Tentative transfers: at the USAEA,CA headquarters (HQ) level, manpower could be transferred from DCSEH (MDW) to USAEA,CA on a temporary basis. Since the DCSEH is also Commander/Director of USAEA,CA, these interim arrangements could be kept under control.

For startup, "35 plus-up spaces" were loaned to USAEA,CA by OCE in May 1981; these were full-time permanent (FTP) spaces from the USACE hirelag. OCE withdrew and eliminated these spaces from the authorized strength of USAEA,CA in FY84; however, a provision for 44 overhire spaces was made later that year. (These spaces were from 36 RPMA reductions due to CA contracting, and eight civilian substitution reductions--they were not the 35 plus-up FTP spaces.) A request was made to have these spaces restored in FY84, but without success.

3. New positions: the operating independence of USAEA,CA required a few additional personnel with parallel functions to MDW; these added TDA slots were provided as needed.

Phase II Implementation Strategy

Phase II consolidation of the RPMA at FTB was directed for FY87 by an MOU.¹² The CA contracted RPMA services for FTB were to be brought under USAEA,CA at the close of FTB's baseline year in FY86.

Overall Plan. USAEA,CA management, in cooperation with the DEH of FTB, developed a strategy for the Phase II FTB consolidation in FY87. Evaluations were planned for FY87 alone, but studies are continuing because of baseline reevaluations and the need for a longer FTB test. The Phase II test is complicated because FY87 was a "crowded" year, with special studies to replace the CPAF eventually with an FFP/ID CA contract mode for the RPMA at FTB.

Guidance and Monitoring. A closely coordinated USAEA,CA schedule for assuming control of FTB RPMA was developed to include the transfer of this function with the associated personnel and preparation of a new, more manageable CA contract for FTB. Initially, in the FY86 baseline year, the DEH at FTB adjusted to the CA contract mode of RPMA performance; this process required development of quality assurance (QA) methods and a contracting officer interface. In FY87, the Fort Belvoir RPMO of USAEA,CA enhanced QA enforcement by retraining craftsmen to perform these functions. Additional USAEA,CA resources were contributed to development of the FFP/ID contract, a contract type in which it is to the contractor's advantage to operate effectively and efficiently.

Staffing. FTB's staffing of personnel spaces for the Installation Staff Engineer (ISE) and the RPMO was created from its residual DEH force before consolidation. Table 5 shows the projected distribution of these transferred spaces.

Automated Systems. One ADP adjustment made for the Phase II implementation was that the CA contractor providing RPMA for FTB maintain cost and job accounting records on the Integrated Facilities System (IFS), whereas USAEA,CA uses the Consolidated Organization Systems for Management Information and Control (COSMIC) System with a batched link only to the FTB Assets Accounting module in IFS. This adjustment was a part of the ASO update for Phase II in FY86. Like all consolidations, FTB base facilities information had to be loaded into the COSMIC system in order to perform the necessary cost accounting and customer billings.

¹² Memorandum of Understanding, HQUSAEA,CA and Fort Belvoir (TRADOC) and USAEA,CA/USAMDW, *RPMA Support Relationships at Fort Belvoir DEH* (23 September 1986).

Table 5
Projected Staffing of Fort Belvoir
for USAEA,CA Phase II Consolidation Testing

DEH Functions & Residual Force Spaces (141)	ISE	USAEA,CA HQ	RPMO
DEH (5)	2	0	3
Admin. Office (4)	1	2	1
Budget Office (6)	4	2	0
Env./Resources (9)	3	6	0
Engr. & Constr. Div. (38)	7	20	11
Resource Management Div. (19)	2	2	15
Fire Prev.& Prot. (45)	0	0	45
Housing Div. (15)	8	0	7
Total 141	27	32	82

General Findings

The structural organization buildup, consolidation operations, and application of a test measurement procedure to these operations have been reviewed. Figure 8 shows the test planning and interpretive impact of an early evaluation of this process.¹³ The flow in this diagram is balanced between the "functionality" of the USAEA,CA structure and the consolidation test requirements. Functionality reflects the capabilities/limitations of the organizational structure and its personnel in performing consolidated RPMA; evaluation reflects the precision of the test process in collecting and interpreting consolidation operations/productivity data.

Lessons Learned, FY84 to FY88

For this report, the term "lessons learned" applies to observed or measured inadequacies or discrepancies in USAEA,CA developmental planning, RPMA operations performance, or as a supplier of special services; it also may relate to suboptimal methods for assessing and evaluating these functions. Lessons learned that can impact the rest of the USAEA,CA Phase II development or the planning for future RPMA consolidation projects are identified below.

Pre-IPG Activities and Planning

A steering committee should be organized first to guide the IPG training/organization/planning and the USAEA,CA-type organization through activation and test operations. The SC should develop

¹³ *RPMA Centralization and Consolidation in the NCR, Lessons Learned Report* (Pan Am World Services, Inc., March 1984).

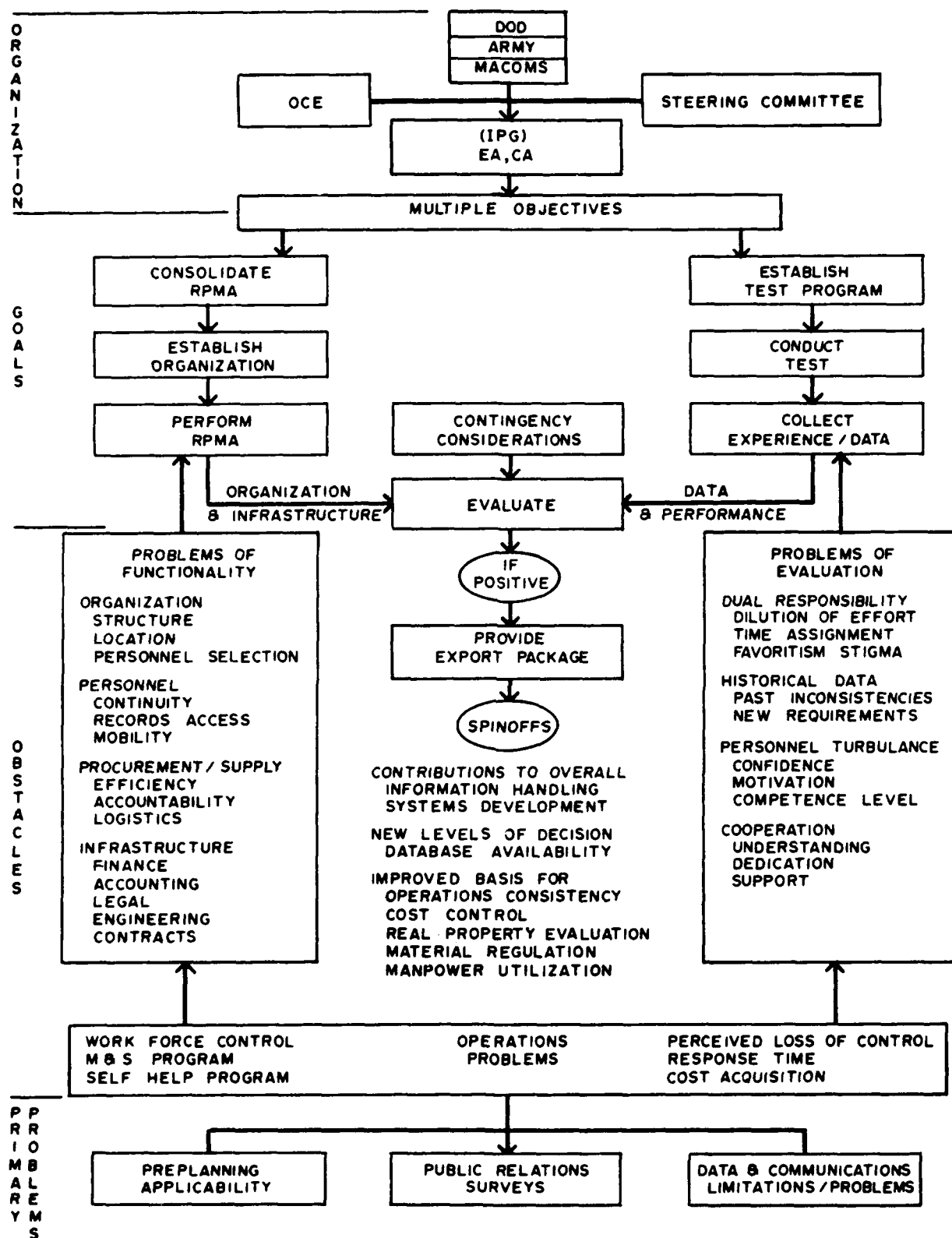


Figure 8. Test evaluation methods. (After a graph by Pan American World Services.)

personnel qualification and selection criteria for the IPG, originate a policy for member recognition and credit, and arrange for early general and directed (specialized) training.

All installations to be consolidated should be required to prepare and maintain current information on their operations and manpower status for baseline and IPG use. (Feasibility and initial baseline studies can be performed in parallel with the ongoing IPG activities.) The SC should also establish firm funding and personnel (freeze/transfer) policies for activation of the consolidation organization.

IPG Formation and Operation

Membership. A variable IPG membership should be considered. Generally, the shorter the terms of needed service, the more likely experienced members can be recruited; hence, phasing IPG sessions and memberships (within the demands of continuity) could allow a better staffed IPG and could allow participation by more specialists.

Office Support. A local administrative or office support service should be provided to help the IPG coordinate actions and document the decision logic behind generated plans and procedures. (Time wasted by the IPG on reproduction and other needed office support services is poor economy.)

IPG Epilogue Team

Some controlling or senior members of the IPG should remain as a consulting nucleus after activation of the consolidated RPMA to provide continuity during startup and initial consolidation. This group should be available to explain the planning requirements and assist in developing any needed planning modifications.

4 USAEA,CA CHANGES UNDER RPMA CONSOLIDATION

The impact of each RPMA consolidation on the structure and operating methods of USAEA,CA are reviewed in this chapter to relate IPG planning to NCR's real-world requirements. The changes resulting from both implementation and longer term operating experience are identified and evaluated to provide an understanding of the consolidation planning deficiencies.

Implementation Experience

Activation of USAEA,CA as an operating organization and the implementation of Phase Ia consolidation began as scheduled on 1 October 1980; this first consolidation phase was followed with the Phase Ib INSCOM consolidation on 1 October 1981 (FY82). More recently, implementation of a Phase II consolidation has required USAEA,CA to assume the RPMA management at FTB for FY87. As expected, these implementations required changes to accommodate the unforeseen, changed requirements, adaptations to personnel capabilities, or a preference by the responsible manager. Adjustments and modifications made in the IPG plan to accommodate the real-world situation are reviewed below.

Phase I Implementation

Implementation of the Phase I consolidation required organizational and functional adjustments to the original plan. Figures 9 and 10 can be used to compare the original IPG organizational chart for USAEA,CA planning with that applied to actual operations in FY82. IPG planning called for five divisions and six field RPMOs (FY80). The completed Phase I consolidation in FY82 resulted in four USAEA,CA-managed divisions: an MDW-managed division (HMD), the Special Assistants Office, the Safety Office, an Admin Office, an ASO, four RPMOs performing in-house RPMA, and an RPMO (VHFS) providing QA for RPMA operations under CA contract.

Structural Changes. The modifications to the original IPG plan during actual implementation had functional impact on USAEA,CA operations. Figures 11 through 15 are organizational charts for comparing the USAEA,CA structures before and after consolidation. These charts for each USAEA,CA Division are simplified to show where planned configurations for FY80 (on the left) differed from the configuration actually implemented at the start of FY82 (on the right). The types of changes are described below the charts. These changes occurred due to:

1. Organizational changes in the RMD (Figure 11). The Management Analysis, Manpower and Automations Branch (MA,MP&AB) was not carried into the FY82 RMD because the Automation Section was upgraded to an ASO. This change allowed direct upper management support to key software developments needed for a broad range of USAEA,CA operations. In FY83, responsibilities of the Installations Branch (in the FY82 RMD) were returned to MDW and the branch was discontinued.
2. Organizational changes in the Engineer Plans and Programs Division/Engineering and Construction Division (EPPD/ECD), as shown in Figure 12. The EPPD and its branches were renamed in FY82 to emphasize their active support to the in-house RPMA of Phase I, IJO work and to construction planning in general. Under the name ECD, the organization maintained its key programming and design role in support of centralized RPMA.
3. Organizational changes to the Supply (Management) Division (SD/SMD), as Figure 13 shows. SD was reorganized and renamed SMD to handle the more independent responsibilities in FY82 than were characteristic of the MDW Directorate of Logistics phase-out, and the SD phase-in environment

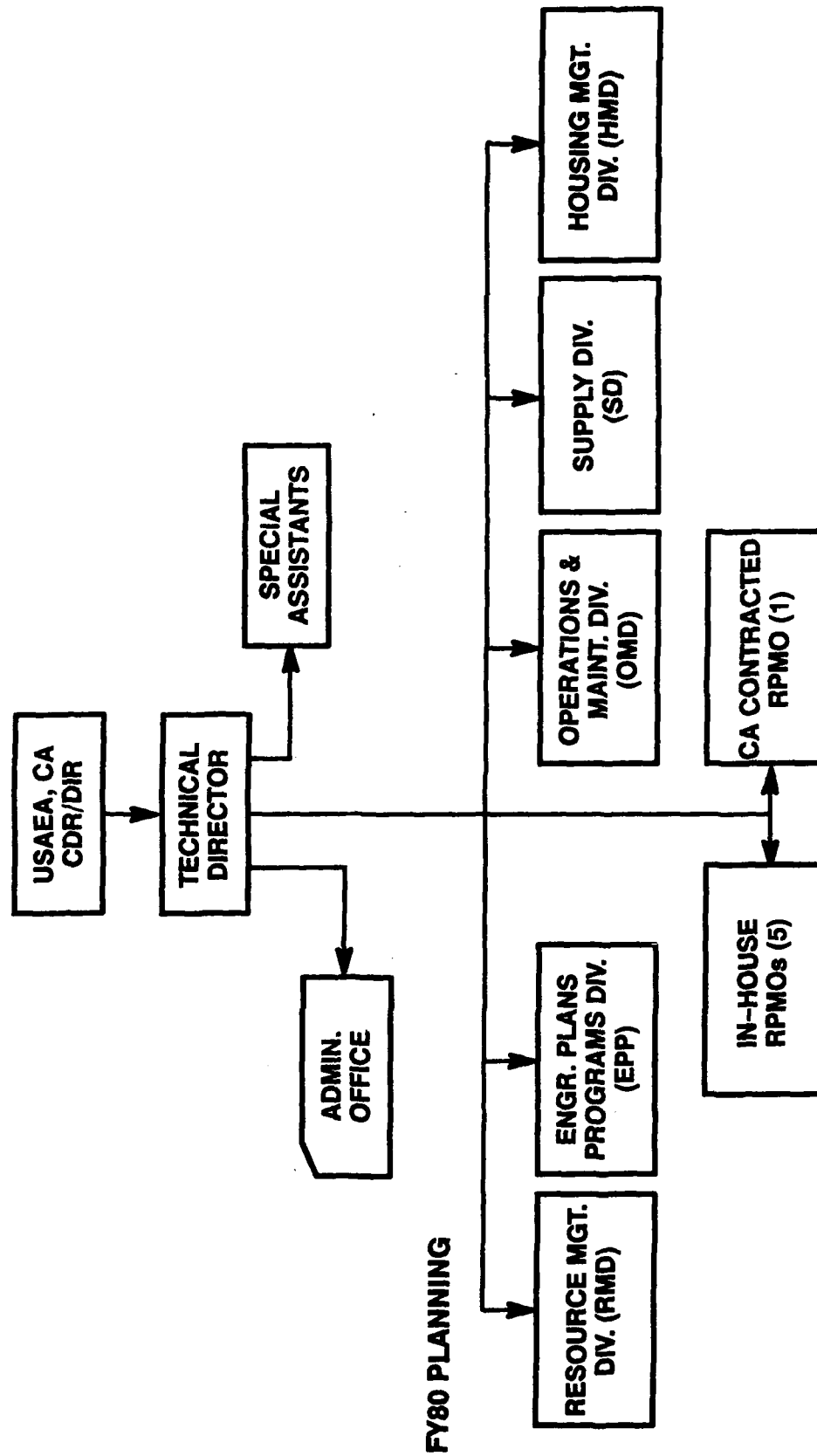


Figure 9. USAEA,CA Phase I test organization as planned by IPG (FY80).

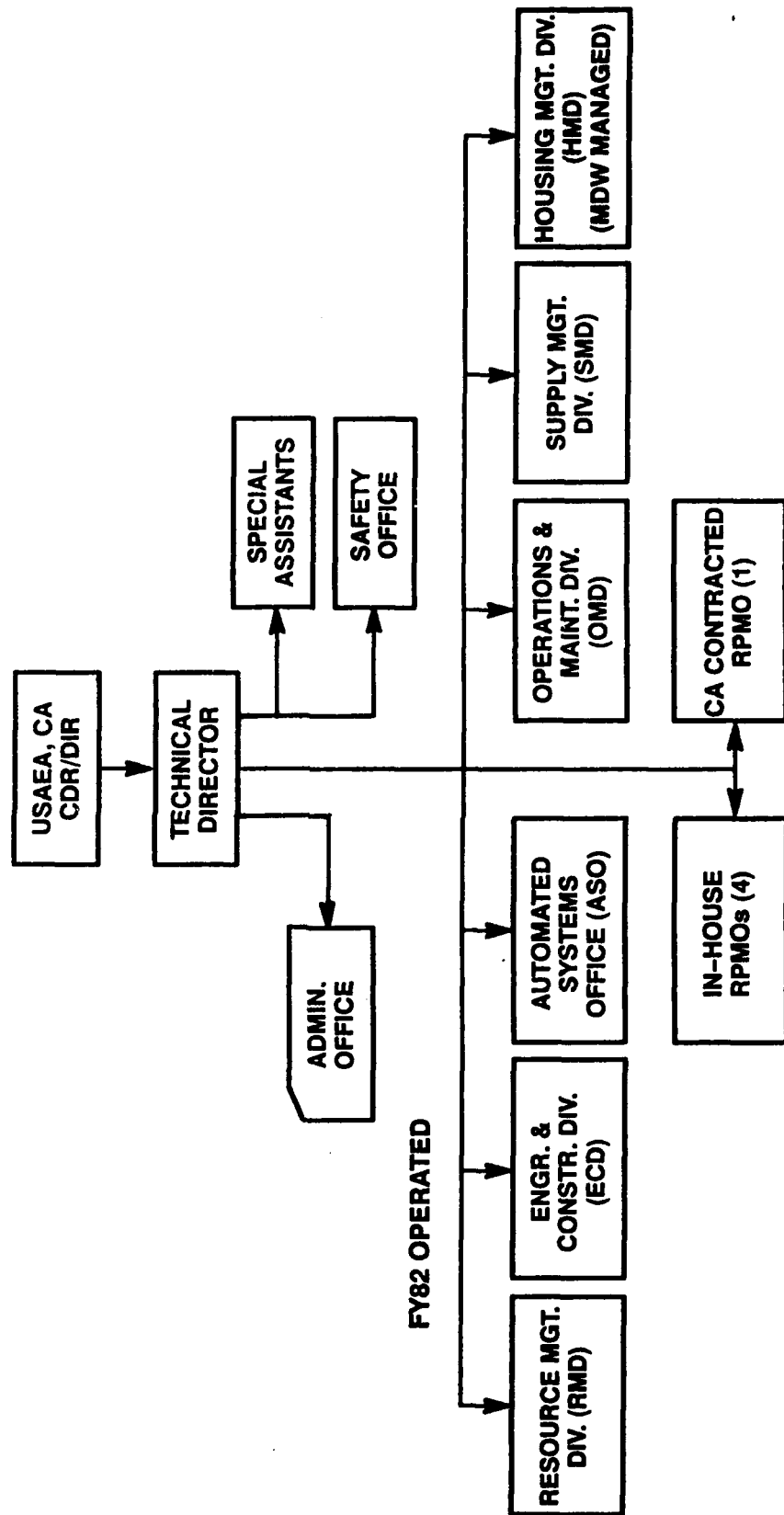
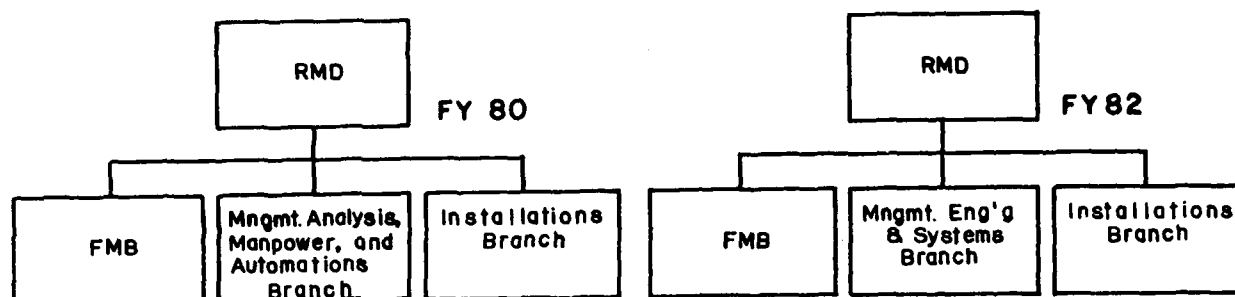
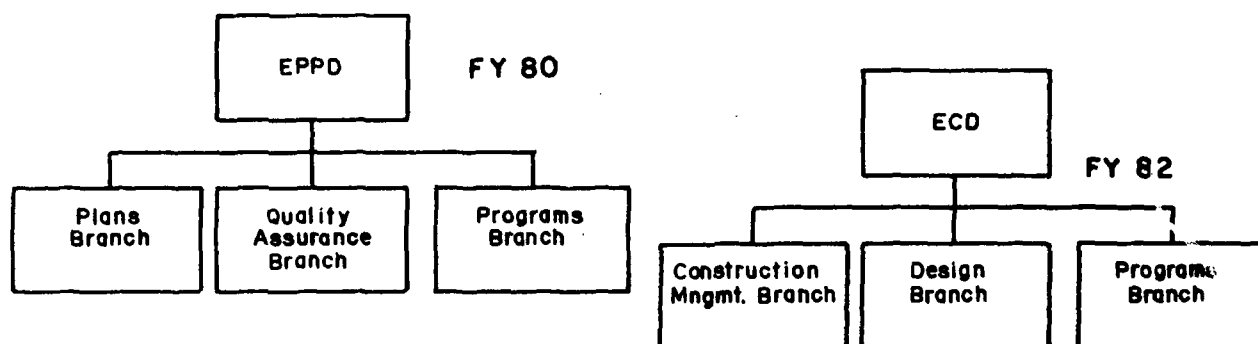


Figure 10. USAEA,CA test organization under actual Phase I operation (FY82).



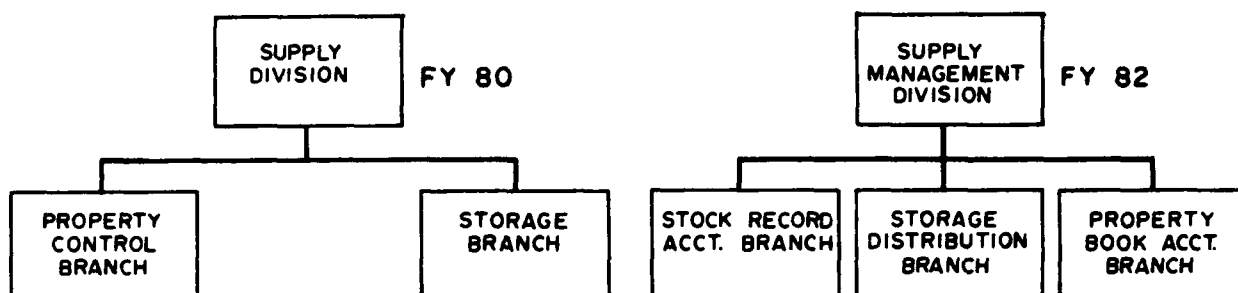
The MA, MP&A Branch was not carried into RMD'82; the Automation Section of this branch was removed from RMD to become an Automated Systems Office (ASO), reporting to the USAEA,CA Director.

Figure 11. Resource Management Division.



The EPPD and Branches were renamed as shown to indicate the ECD active support to in-house RPMA of Phase Ia, especially IJO and construction planning.

Figure 12. Engineering Plans and Programs Division (FY80)--changed to Engineering and Construction Division (FY82).



SD was reorganized and renamed SMD to handle the more independent responsibilities in FY82 than was true of the DOL(MDW) phase-out and SD phase-in environment of FY81. The PBA Section of PCBr (SD) became the PBA Branch of SMD.

Figure 13. Supply Division (FY80)--changed name to Supply Management Division (FY82).

of FY81. The impact of this change was to ensure the growth of an effective supply service for USAEA,CA.

4. Operations and Maintenance Division (OMD) organizational changes (Figure 14). OMD was initially implemented as planned by IPG, but a significant reorganization occurred during FY83.

5. Change in RPMO configurations as shown in Figure 15. The MDW RPMOs added a Contracts Inspection Office and temporarily used a Supply Annex for materials rather than a Supply Issue Point in FY82. VHFS adopted an RPMO configuration best suited to the management of CA contracted RPMA.

Operational Methods. To be compatible with the previously described USAEA,CA structural and functional changes, operating methods were modified. The upgraded primary USAEA,CA functions are evaluated in later chapters of this report. However, one far-reaching change deserves comment here. In FY82, MDW Post Commanders were given review responsibility for the RPMM on their posts. A net effect of this change was to involve the RPMM in MDW post FE work that could have been assumed as an SE function. Hence, the RPMM began to represent the interests of both USAEA,CA and the installation/customer. This dual representation was seen by earlier USAEA,CA evaluations as creating problems of accountability in areas of cost/time acquisition or allocation and could generate perceptions of favoritism or divided loyalty.¹⁴

¹⁴ *RPMA Centralization and Consolidation in the NCR, Lessons Learned Report.*

FY80 Planning and
FY82 Operations

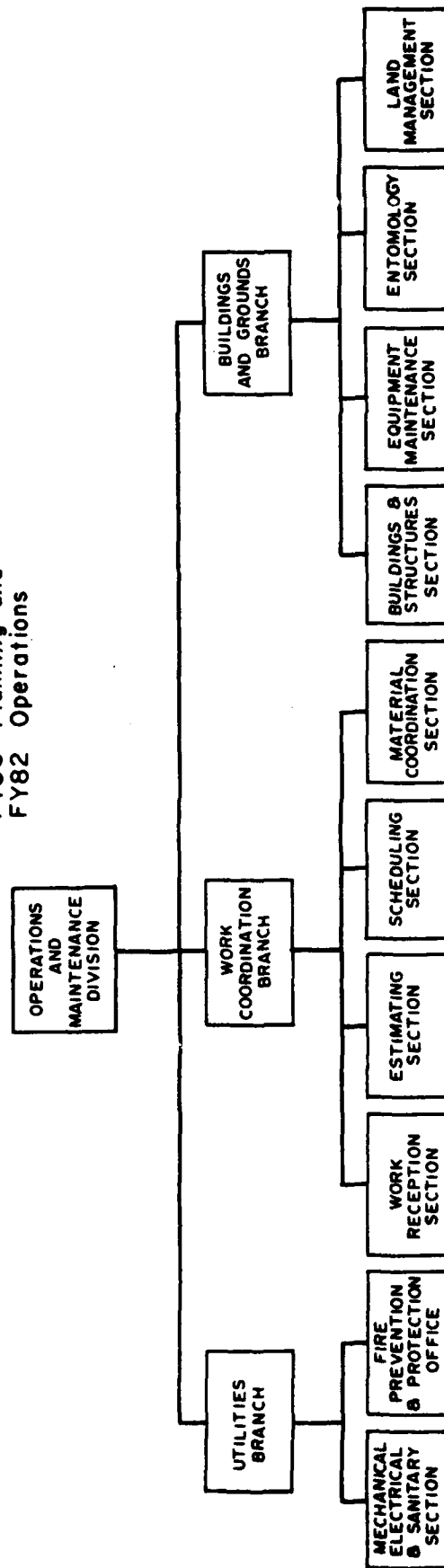


Figure 14. Operations and Maintenance Division for FY80 and FY82 (no change with implementation).

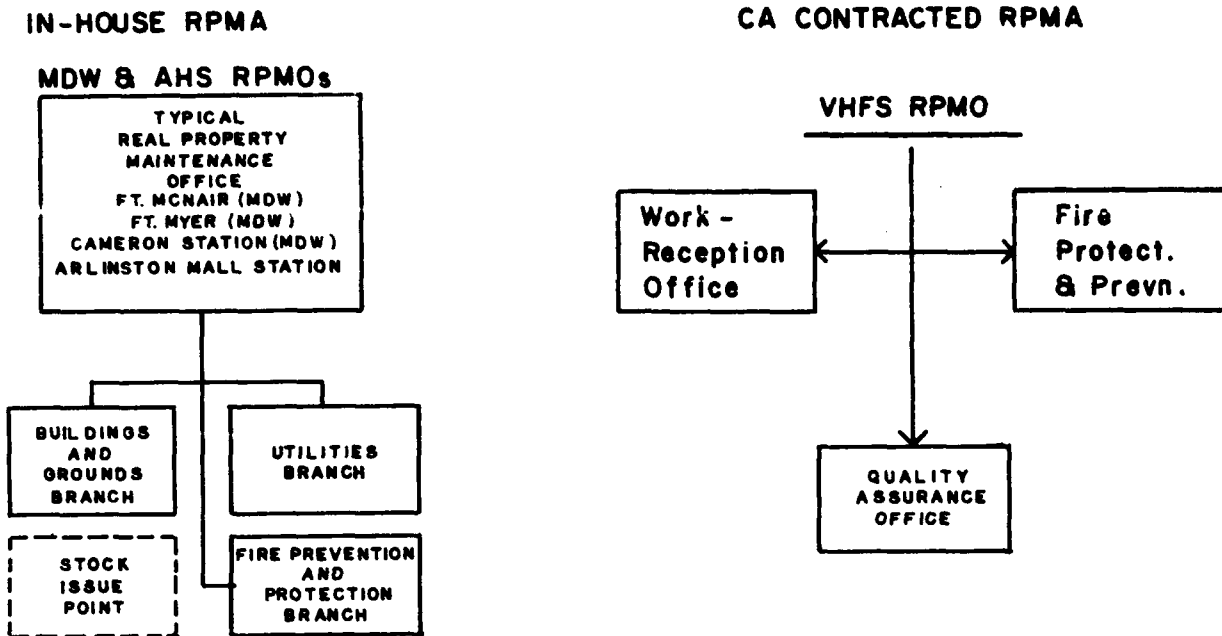


Figure 15. Typical RPMA configurations (FY80 and FY82).

At the time of USAEA,CA startup, this duality was effective in reducing MDW apprehension about USAEA,CA nonresponsiveness in the initial period after activation. As a long-term procedure, however, the managerial effectiveness of this arrangement and ultimate responsibility for the RPMA program and its execution can be questioned.

Phase II Implementation

The Phase II consolidation of FTB has required a large administrative and support effort by USAEA,CA HQ and by BDE for the precontract studies and Performance Work Statement (PWS) documentation needed for evaluation and development of an FFP/ID contract. The Phase II consolidation of FTB and its FY87 test year were complicated by CA contract reevaluation studies for FTB. These studies triggered a decision not to renew the final option year of the CPAF contract, but to develop and solicit an FFP/ID contract to be implemented in FY88. However, a lengthy delay in DA approval of the contract acquisition plan resulted in solicitation of a new contract start for FY90. (FTB Phase II consolidation test results are assessed in Chapter 9.)

Special Operations Support Sources

Important resources in developing USAEA,CA's operations were the in-house data systems development capabilities and the dedicated District support.

Computer Support

USAEA,CA management has strongly emphasized the development of ADP systems to manage or support RPMA operations as required. COSMIC is the set of modular data programs managed by the IMO of USAEA,CA. COSMIC meets the internal data and interface reporting requirements of

USAEA,CA; it is expected that the upgraded IFS to be released in FY90 may incorporate some of the job-tracking capabilities of WONDERS, a program developed in-house for use in COSMIC.

Phase I ADP Development. In FY82, Work Reception forms (DA Form 4283) were being processed and the Work Order forms (DA 4284) were being generated and processed on WONDERS. ADP studies by the ASO to simplify and improve a faltering IFS customer billing output contributed greatly to improving operability, increasing accuracy, and encouraging wider use of automated support. In FY82, customer billing was supported by systems developed in-house while IFS retained the Assets Accounting (AA) and Work Management Report functions.

The IFS role from FY82 to FY88 has been to support all DEH organizations in AA, a program for cost-tracking RPMA functional accounts, and the Facility Engineer Management System (FEMS) for job status information.

IPG direction and early planners considered IFS to be essential to USAEA,CA operations. However, linkage problems with the Corps of Engineers Management Information System (COEMIS) and the lack of usable operations feedback forced a redesign of IFS and led USAEA,CA to develop its own special cost/status tracking systems. Detailed job-cost accounting information by the CA contractors has continued to rely on the AA module of IFS; roll-up cost tracking and all other work/services have been handled exclusively in COSMIC since FY84.

Installation facilities data for MDW/INSCOM was loaded into the ASO systems after FY83 for in-house job tracking by WONDERS and upward reporting of cost accounting and customer billings by the IFS, COEMIS, and ASO (now COSMIC) systems.

Phase II ADP Developments. IMO/ASO upgraded COSMIC and applied the system to FTB data. Preparation for the Phase II support included loading the FTB data for a full system capability in the Phase II consolidation and testing (also see Chapter 6). An Information Systems Planning Team was organized in FY88 to study information systems under current and developing technologies. This study provided input to help guide future ADP development in USAEA,CA.

Consolidation, installation, and facilities data at FTB are loaded into IFS by the RPMA contractor and into WONDERS by USAEA,CA. As in Phase I, detailed job-cost accounting information from CA contractors continues to be processed by IFS during Phase II (through FY88).

District Engineers Support

Essential Baltimore and Norfolk District support was well planned and coordinated prior to USAEA,CA activation. The closeness and availability of BDE led to a reliance on its extensive capabilities. Hence, support currently provided to USAEA,CA by BDE is more extensive than originally planned; notably, this District is responsible for the release of funds for all services performed by USAEA,CA. Procurement and Contracting (P&C) support is furnished by CS/FTB procurement/contract field offices, whereas support for large projects, finance, and accounting, and all legal resources are provided at the Baltimore District HQ.

BDE Field Offices. Activities of the CS and FTB field stations of BDE are:

1. EA,CA Procurement Support Branch, Cameron Station. This office is dedicated to USAEA,CA operations at installations consolidated under Phase I, having provided the commercial purchases for Phase I test activities. It still provides updated procurement for all MDW/AHS RPMA activities. With the start of Phase II operations, limited support is also provided to the RPMO at FTB (Chapters 5 and 6 assess the supply and procurement operations).

2. EA,CA Procurement Support Branch, Fort Belvoir Section. This field office provides an onsite Contracting Administrative Officer to implement and administer the CA contract for RPMA services and installation service contracts, and also to allow close support to the RPMM Contracting Officer's Representative (COR) for QA enforcements.

BDE HQ Support. HQ provides engineer designs, P&C support, F&A support, contract management, legal counsel, commercial activities, and other services with organizational groups dedicated to USAEA,CA support.

Phase I Developmental Status (FY81 to FY86)

As described previously, the Phase I test of the NCR RPMA consolidation began in FY81 with the integration of MDW installation in-house FE forces into USAEA,CA and continued into FY82 with the integration of INSCOM. Operational evaluations continued until the end of FY86. This section evaluates the developmental status of USAEA,CA Divisions over the FY81 to FY86 Phase I test period.

Changes in Operating Environment for Management

The two startups in Phase I implementation further burdened the organizing USAEA,CA management. However, once activated, the USAEA,CA demonstrated an ability to adapt, reevaluate, and learn from experience. Events that resulted in modifications to the USAEA,CA structure during Phase I operations were:

1. Changes in goals and policy--

- A directive that CA cost comparison studies be deferred for MDW installations (Fort Myer, Fort McNair, and CS) and AHS
- The decision to retain the Housing and Management Division (HMD) in MDW.

2. Changes in conditions--

- Elimination of DMA from Phase I planning
- Initiation of CA contracting (VHFS)
- Proposed decommissioning for AHS.

3. Productivity: finding a productive balance between--

- An independent USAEA,CA and the valued support of other agencies
- New environments, opportunities, and/or alternative methods.

Structural Changes

USAEA,CA organizational changes also occurred during the Phase I test due to operational experience. These changes are described below.

HQ Organizational Charts. The Phase I consolidation test organization chart for FY86 is essentially the same as shown for FY82 in Figure 10.

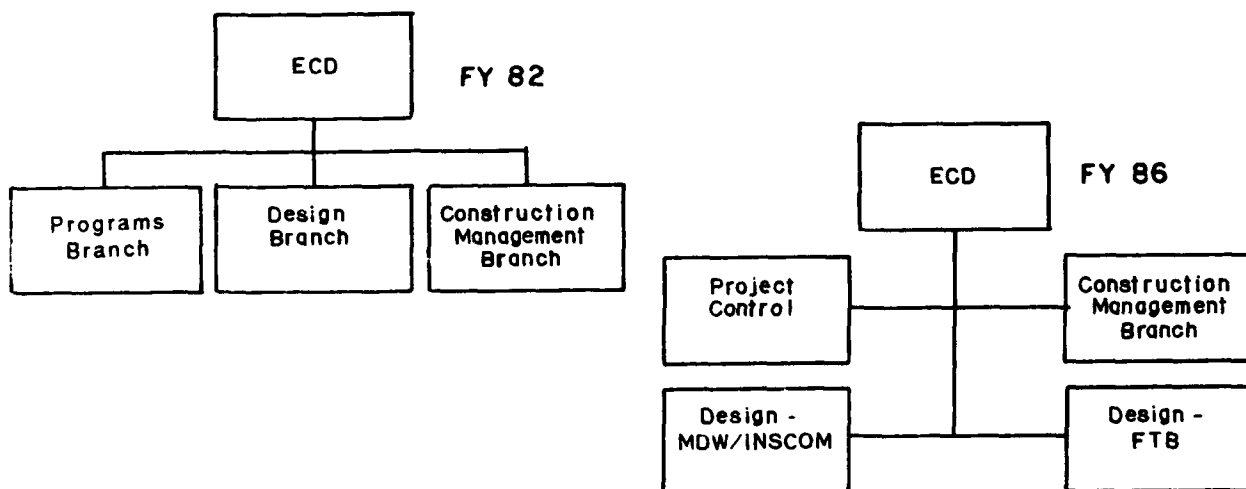
Planning Divisions.

1. Resource Management Division: a desire by upper management for direct control of the developing automated systems in RMD resulted in making this operation an ASO line function to the Director (FY82). Placing the ADP development function under direct upper-management control permitted this group to take a more responsive stance to the development of automated systems to meet the data collection and processing needs of USAEA,CA, BDE, and the customer.

2. Engineering and Construction Division: ECD retains a full engineering, design, and project estimation capability, being as vital to the consolidated operations of USAEA,CA as to the noncentralized RPMA support in the traditional DEH operation. All Phase I test operations were fully supported by the ECD configuration of FY82. An ECD expansion in FY86 provided a dedicated FTB Design Branch to support the Phase II operations the next year. This change is shown by the ECD organizational charts in Figure 16. The impact is that a full engineer/design support service is available from USAEA,CA for maintenance tasks under either the CA or in-house generated RPMA service mode.

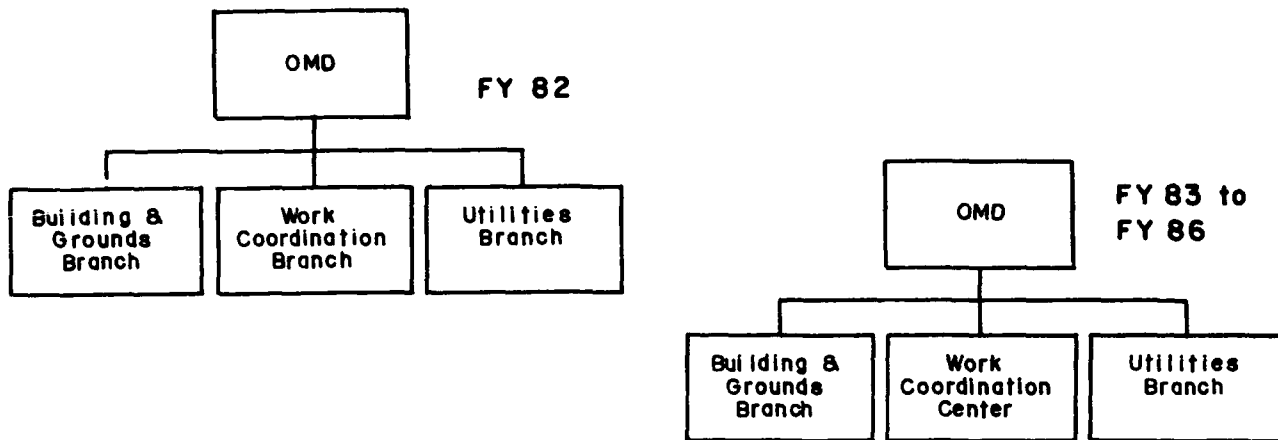
Operational Division.

1. Operations and Maintenance Division: OMD was restructured in FY83 to effect a decentralization of the OMD work coordination functions, mostly related to improving IJO processing time. During this FY83 reorganization, OMD was physically relocated to USAEA,CA HQ (then at Fort McNair). At this time, the Work Order Reception, Scheduler, and Planner/Estimator functions and personnel were transferred to each of the RPMOs. A Materials Coordination function was transferred to SMD. OMD continues to *monitor* Work Order Reception and RPMA support; also the NCR-wide Service Order Reception desk and processing responsibilities are retained by OMD (Figure 17).



Design Branch was reorganized to provide for Phase II FTB support in FY86.

Figure 16. Engineer and Construction Division (ECD) Phase I configurations, FY82 and FY86.



OMD reorganized in FY83; transferring the JOR Desk and P/E functions to RPMO and the Materials Coordination function to SMD. The monitoring of Work Coordination and P/E functions and the operation of the SO Reception Desk remained with OMD (USAEA,CA HQ).

Figure 17. OMD Phase I configurations, FY82 and FY86.

Placing the Planner/Estimator at the RPMO allows immediate jobsite inspections and informal customer contacts, which provide reassurance to the customer that any special requirements are being handled. Because SMD resolved its more primary supply problems before assuming materials coordination, SMD developed a more integrated program and an improved supply control than had existed previously.

The greater RPMO local control and improved IJO responsiveness were gained at the expense of added personnel spaces (up to 7). Improvement in IJO performance occurred, but for reasons that are inconclusive; decentralization as well as learning-curve improvement, onsite training, improved worker incentives and better support to the RPMO all had an influence.

2. Supply Management Division: SMD developed an effective warehouse system during the Phase I test by adapting prototype ADP systems to its specific needs and changing either organization or procedures when service potential improvements could be identified. (Chapter 6 reviews the SMD and evaluates the supply function.)

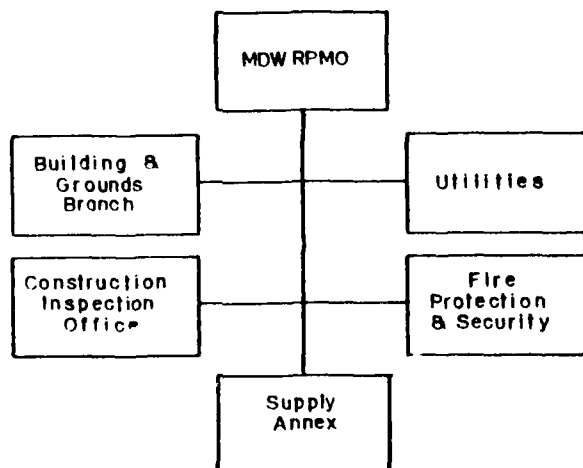
USAEA,CA Field Stations.

1. MDW/AHS in-house RPMA performance:

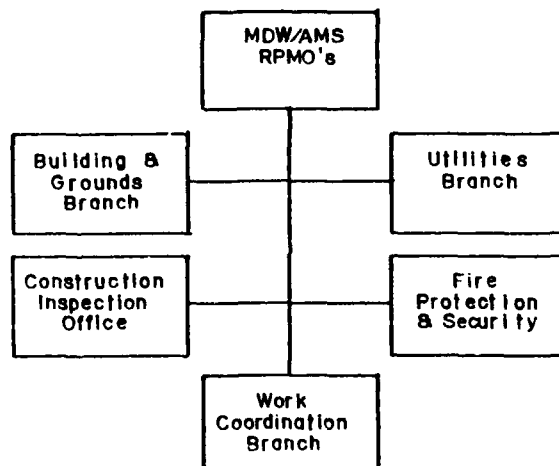
The RPMOs for each Phase I consolidated installation can be identified in the generalized USAEA,CA division organizational chart for FY86 provided in Figure 18. The Phase I installations that are provided in-house RPMA service include:

AHS (INSCOM)--the RPMO at AHS, although faced with a decommissioning, has operated most effectively and is the only group performing RPMA under the IPG's original USAEA,CA concept. AHS procedures have been a model for RPMA cost-effectiveness and productivity.

Configuration at start of
Phase I (FY82)



Configuration at end of
Phase I (FY86)



Supply Annex discontinued in FY82; and replaced by SMD Central Warehouse. Work coordination and scheduling functions were transferred to the RPMO from OMD in FY83.

Figure 18. Generalized RPMO configurations, Phase I.

CS (MDW)--the RPMO at CS has a relatively low-cost operation, performing RPMA under a new RPMM effectively and efficiently. In FY88, CS adopted a more regulated, better organized RPMA procedure. An FY88 review of RPMA productivity placed CS highest among the installations surveyed.

Fort McNair (MDW)--this RPMO operates under the scrutiny of many resident senior officers; hence, building and grounds (B&G) operations are heavily emphasized. Independent observers believe that more time should be spent on preventive maintenance (PM); DCSEH believes Master Planning could be emphasized more and brought to a meaningful state, and the RPMM emphasizes the benefits of well ordered procedures for this post.

Fort Myer (MDW)--this RPMO handled more than half of the Phase I work by USAEA,CA during Phase I, and has placed considerable emphasis on the traditional DEH values of doing the job quickly and effectively.

2. VHFS (INSCOM) contracted RPMA: CA-contracted RPMA at this installation has been performed under both normal and disruptive (contract termination) conditions. A decline in RPMA services (after a sudden contractor withdrawal) was avoided through a major support effort by USAEA,CA. No changes in the VHFS configuration of Figure 15 were made during participation in the Phase I consolidation test.

Changes in Operations and Procedures

USAEA,CA operating methods since consolidation have been adjusted by management as described below.

Changes to Routine Procedures.

1. RPMM duties: as the operations hub in performing RPMA, the RPMM is a focal point for USAEA,CA service. For AHS, the RPMM has performed economically and efficiently in accordance with the IPG plan. MDW also has performed RPMA effectively, but under a more adaptive environment with procedural variances at each post. Delegation of certain ISE tasks to MDW Post Commanders has added to the RPMM duties and improved responsiveness at each MDW post.

2. IJO performance problems: continuing studies to effect better IJO processing have contributed to evolutionary-type procedural changes and, in some instances, influenced divisional and branch reorganizations within USAEA,CA.

Unplanned Activities. USAEA,CA has the size and flexibility to provide the contingency support needed for RPMA emergencies that sometimes occur in the NCR area both within and outside the consolidated installations. Unplanned activities that have occurred during Phase I test operations include:

1. Phase I operational emergencies. When the contractor providing RPMA services to VHFS would not extend these services beyond contract completion at any price agreeable to the Government, interim RPMA support was needed while a new contract was being solicited and processed. USAEA,CA organized a VHFS management team from its existing staff, acquired the formerly contracted craftsmen from in-house shops, and then marshalled equipment from other installations to ensure continuing M&R support for the base and its tenants.

2. CA contracting support. USAEA,CA directed the preparation of necessary documentation to support the VHFS contract solicitation and selection process, including the development of a new PWS. In addition, workload surveys and technical exhibits needed for the new RPMA contractor solicitation were provided by USAEA,CA, followed by source selection studies and consultation support for a successful new VHFS CA contract.

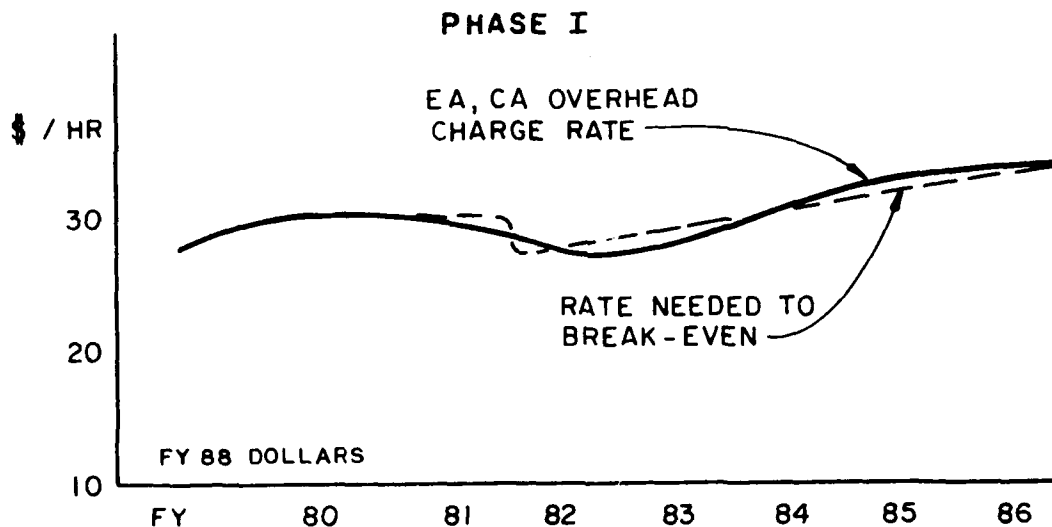
3. Support to DOD NCR facilities. Requests for specialized M&R assistance in the NCR from other MACOMs placed USAEA,CA in a position to provide the following assistance:

- Refurbishments to U.S. Soldier and Airmen Homes
- Initial and followup pest control by a USAEA,CA entomologist for Henderson Hall (U.S. Marine Corps facility)
- Repairs at Arlington National Cemetery
- M&R services for the U.S. Army Aviation Command Davison Flight Simulator and hangars (at FTB)
- Hazardous materials control and investigation of environmental deficiencies. An evaluation/cleanup of potential asbestos health hazards in 540 buildings within USAEA,CA was initiated. This work identified the need for an asbestos program and has been a source of information to other agencies in this area.

Cost of Customer Services. The customer's cost concerns relate to prompt, correct, and easily understood billing, and reasonable utility charges and overhead costs. The USAEA,CA Steering Committee documented the growth in overhead and utilities, and found the increase to be modest when compared in constant-value dollars.

Figure 19 represents the level of overhead sustained by USAEA,CA from FY82 to FY86. A solid line indicates the actual overhead rate charged to the customer (FY88 dollars) and a dashed line denotes the rate needed to break even. Makeup charges were applied in FY85 to cover some insufficient charging in FY84. General increases in overhead have been modest and are due to improved service, both in timeliness and quality of performance. Throughout Phase I, USAEA,CA maintained a favorable comparative cost with industry rates for both in-house and contracted RPMA work, and continues to do so in Phase II.

The OMD of USAEA,CA continually searches the industry for the best possible utility rates for all military services in the NCR. Such rate searches were not attempted in the NCR before USAEA,CA was organized. In compliance with AR 420-41,¹⁵ USAEA,CA to date has issued 29 utility contracts for a better cost and service to the Government, whereas none were issued prior to USAEA,CA.



- NOTE: (1) A fixed basis of cost comparison is maintained by application of credible inflation factors.
- (2) Special or transient debit situations (from low overhead estimates in FY84) had to be amortized in FY85 and FY86.

Figure 19. USAEA,CA RPMA overhead charge computed for FY82 through FY86 in constant 1988 dollars.

¹⁵AR 420-41, *Utilities Contracts* (HQDA, 1 October 1982).

Productivity Trends

Workload. The level of job and service orders support between FY82 and FY86 is shown in Figure 20 for MDW and in Figure 21 for INSCOM installations. Existing staff was redirected and new personnel were hired to assist in Phase II feasibility studies and in managing baseline documentation.

Personnel. Figure 22 is a plot of the numbers of FTP personnel on the job at USAEA,CA and the corresponding number of TDA slots through FY86. The overhiring that was permitted indicates the importance of the USAEA,CA development. The significant increase of 88 FTP slots at the end of FY86 was due to a buildup for the Phase II consolidation of FTB in FY87.

Phase II Baseline and Test Status (FY87 and FY88)

As a result of the Phase II FTB consolidation and Phase I test experience, USAEA,CA again saw some reshaping. The direction of USAEA,CA development was influenced by MACOM changes at the close of FY86 for some Phase I installations, and by an FY89 Phase II MACOM change affecting FTB. MACOM support has changed as follows:

1. INSCOM--USAEA,CA relinquished RPMA support of VHFS to the U.S. Army Materiel Command (USAMC) at the start of FY88, eliminating VHFS from the NCR RPMA consolidation test. However, all Phase I test objectives for VHFS were met. INSCOM plans to complete a move to FTB from AHS by late 1989. The AHS site will be transferred to the State Department in FY89, with buildings and property to be used by the State Department and the National Guard. To facilitate this move, a carefully controlled M&R schedule was developed and applied by USAEA,CA between FY87 and the actual installation transfer date.

2. TRADOC--FTB was consolidated into the Phase II test of USAEA,CA at the start of FY87. Assumption of RPMA for the FTB installation has increased the capacity and flexibility of services available from USAEA,CA.

Changes in USAEA,CA Structure

RMD abolished the Installation Branch in FY83 when facility space assignment and real-property status functions were returned to MACOM onsite administration. Figure 23 identifies the RMD organization as configured for Phase I in FY82 and as reconfigured during FY87.

The establishment of IMO is one example of a beneficial change in the USAEA,CA structure. IMO was formed from the ASO and the Administrative Office in FY87. Information handling and communications requirements have increased steadily since USAEA,CA activation in FY81. Automated systems responsibility was first delegated to an Automated Systems Team attached to the RMD; then ASO became an entity attached to the Director's office in FY82; finally, in FY87, ASO became part of the newly created IMO to provide coordinated management for all aspects of information processing and control. Application of locally developed and DA-supplied software systems have allowed the full potential of the NCR RPMA concept to be realized, including work management and cost/billing accounting.

Changes in FTB Operations

MACOM Change. FTB's Base Operations Support (BASOPS) was transferred from TRADOC to MDW at the close of FY88.

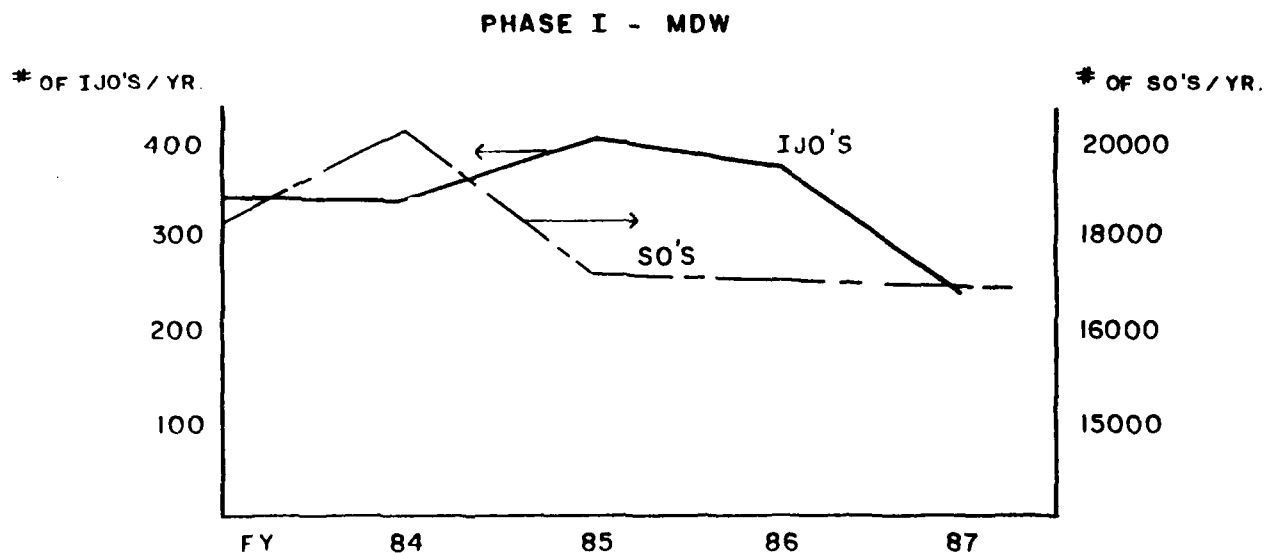


Figure 20. MDW installation SO and IJO workload, FY83 to FY86.

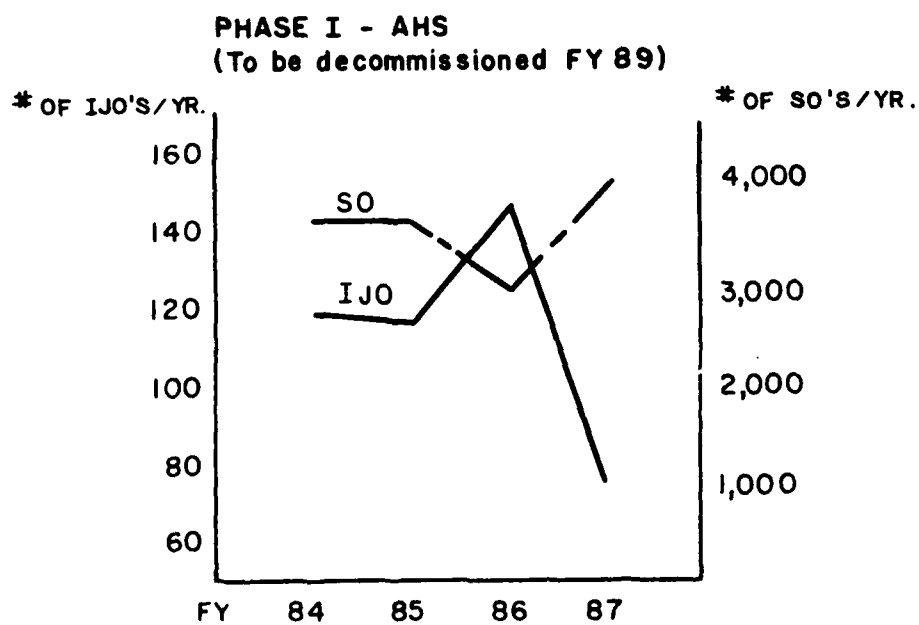


Figure 21. INSCOM installation (AHS) SO and IJO workload, FY83 to FY86.

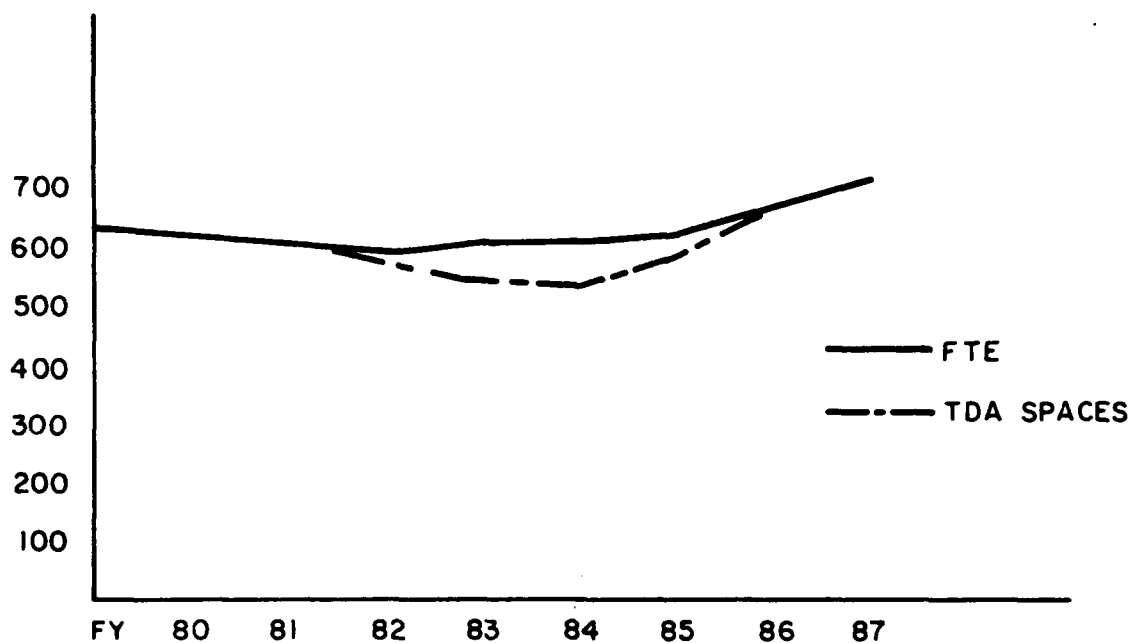
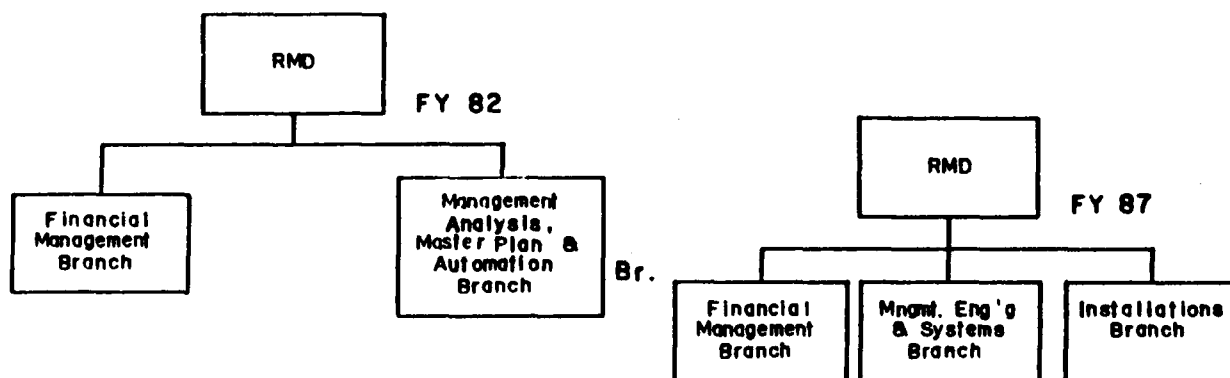


Figure 22. USAEA,CA personnel levels, FY82 to FY86.



The Installations branch functions were returned to MDW in FY87.

Figure 23. RMD configurations, FY82 and FY87.

Improving Fort Belvoir RPMA Operational Control. In FY87, the CPAF contracting mode used at FTB was under study for replacement by an FFP/ID contract by FY90; considerable USAEA,CA resources were expended to evaluate and develop the proper type of contract for FTB. The impact of this action was that reorganization of the Contracts Management Branch of the FTB RPMO was deemed necessary for the CPAF contract; the follow-on FFP/ID contract allowed for tighter, more effective control by USAEA,CA management.

USAEA,CA Performance Improvements. Performance was to be tested by assessing USAEA,CA's compliance with consolidation test objectives. The two key objectives were to:

1. Demonstrate successful consolidation of NCR-RPMA.
2. Test the concept (feasibility) of USACE support to this consolidation.

To document Phase II consolidation, a baseline report for the FTB RPMA contract year FY86 and a Phase II consolidation report and analysis for FY90 are required.

Test data evaluations also are required to document this phase. The data to be evaluated include:

1. Baseline Data (FY86)--14 comparison indicators are used by E. L. Hamm and Associates in a continuing FTB baseline study; Table 6 identifies these FTB indicators and notes whether they are collectable.

2. FY87 and FY88 Test Data Assessment of the Phase II consolidation evaluation will be postponed until the FFP/ID contract has been implemented. Results of this assessment are expected to determine the following:

- Cost effectiveness--the same or better service is provided by USAEA,CA at the same or less cost
- Special services--the essential services BDE has provided to the FTB RPMA support an improved CA contract effectiveness
- Customer satisfaction--the overall level of user satisfaction has been maintained
- Feasibility--consolidation is a feasible, effective means of CA contract management.

General Findings and Lessons Learned

The findings of this general overview are limited to consolidation (implementation) and the testing of key functional performance areas; more detailed functional assessments are given in the remaining chapters.

Lessons From Early Implementation

The true operations status of an installation to be consolidated should be determined. Catch-up problems may occur when installations to be consolidated are operating below acceptable levels. Future IPG planning should provide contingencies for consolidating an installation with performance below the predicted level.

Table 6

**Comparison Indicators for Baseline Analysis
(Baseline Feasibility Assessment)**

COMPARISON REQUIREMENTS FOR:

A. Resources:

1. Cost:

- Overhead rates for the RPMA program
- Shop costs (rate)*
- M&S equipment costs
- Funds distribution

2. Manpower:

- Full-time-equivalent (FTE) man-years
- Personnel compensation (not collected)

B. Performance Evaluation:

1. Responsiveness:

- Opinion surveys
 - Commander's survey
 - Service requestors' survey
 - Family housing survey
 - Workforce survey*
- SO duration
- IJO duration*
- Design project analysis duration

2. Productivity:

- Engineer performance standards (EPS), percent use*
- Productivity and cost measures

*Note: These indicators were not collectable for Fort Belvoir; all other entries were both collectable and comparable.

Customer goodwill can be enhanced by providing effective communication during implementation planning. This measure can also improve coordination and productivity for the consolidation agency. Future consolidations should:

1. Mount a continuing campaign to involve the customer in the consolidation agency's goal achievement process. Better public relations will assure the customer of USAEA,CA's permanence and can clarify the commonality of USAEA,CA and installation interests.
2. Place a correct perspective on startup or consolidation problems for the customer. Early inconveniences to a customer can create negative impressions that can remain long after the problem has disappeared.

Other Considerations

ADP Planning. In planning future centralized RPMA systems, expert consideration should be given to the growth capabilities of ADP systems so that the most suitable systems are selected. This planning should be done by ADP specialists to be effective.

Cross-Fertilization. Benefits can accrue to the consolidating agency when the mixture of consolidations has been well planned. USAEA,CA has grown in expertise and general capability with each consolidation without being overwhelmed by the ever larger consolidation task. For Phase II, USAEA,CA has:

1. Successfully assumed a greater service base due to the FTB consolidation.
2. Demonstrated that the USAEA,CA test organization can provide support to large-scale RPMA contracted operations as well as innovative restructuring of CA contracts.

5 RESOURCE MANAGEMENT

USAEA,CA requires sound fiscal controls if the full benefits of a centralized RPMA are to be realized. This chapter investigates these controls in terms of scope, evolution, operations (a functional assessment), and efficiency.

Scope of Current Operations

Task funding controls, documented task execution, and accurate billing are essential to effective performance of the revolving fund type of operation chosen for USAEA,CA. These financial management functions are shared among the RMDs at Fort Myer, VA, BDE in Baltimore, MD, and Missouri River Division payroll in Omaha, NE.

Figure 24 shows the RMD organization within USAEA,CA; Figure 25 shows the relationship of RMD to units external to USAEA,CA.¹⁶

Fiscal Responsibilities

Planning. RMD monitors the fiscal planning of RPMA participants. Although customer budgets for the fiscal year are compiled and controlled by the MACOM budget allocations, their status is of interest to RMD/USAEA,CA. USAEA,CA divisions can offer support to installation customers in detailing job requirements and in financing these jobs within organization and post/installation maintenance limitations.

Special Methods. The consolidated operating budget for USAEA,CA activities constitutes a revolving fund requirement which is then sent to BDE. The RPMA revolving fund is a resource with which customer requirements can be serviced before payment--in effect, establishing a credit line until the work is completed. The fund is then reimbursed (revolved) by billing the customer as costs are incurred for the requested service. USAEA,CA describes its cyclic reimbursement process as illustrated in Figure 26. The revolving fund allows for up-front evaluation/design and early implementation of the job, minimizing the prejob funding delays associated with many other operating methods.

Interface Support. BDE records and maintains the financial records of each reimbursable order for USAEA,CA. These accounts include PM and all Standing Operation Orders (SOO) under firm planning, scheduled IJOs, and accepted SOs.

Features of the RMD Organization

RMD currently meets financial, accountability, and accountability-type responsibilities through two branches: the Financial Management Branch (FMB) and the Management Engineering and Systems Branch (MESB).

FMB performs routine funds development, funding verification, data communication support for RPMA operations, and year-end support to USAEA,CA planning; maintains data bank summaries of work order funding status for USAEA,CA and BDE review; and may perform special financial studies if dollar-related problems occur. FMB operational interfaces are shown in Figure 27.

¹⁶ R. Blackmon.

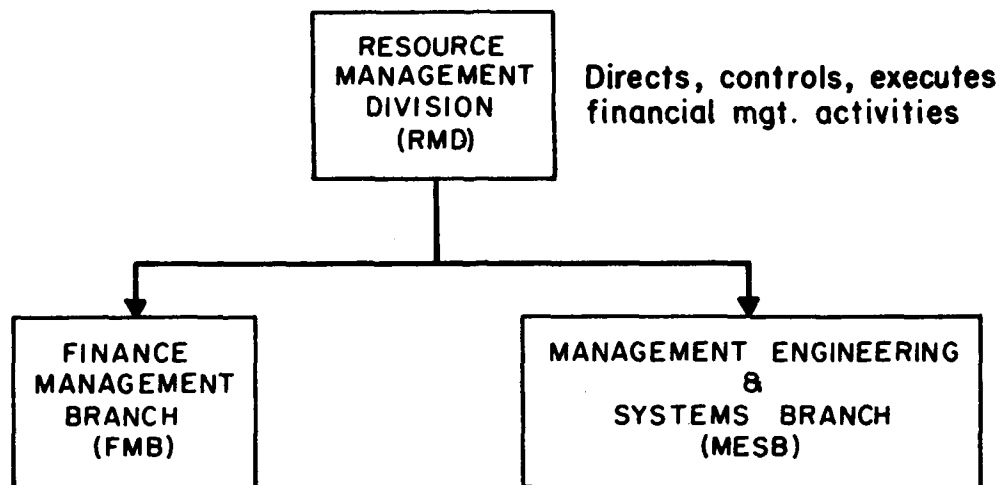


Figure 24. RMD organization, FY88.

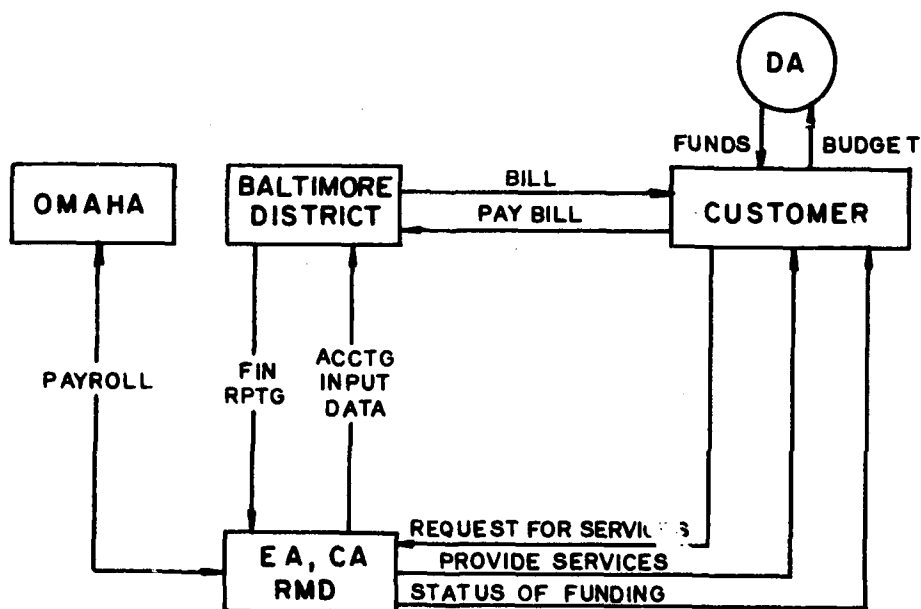


Figure 25. Generalized concept for financial management responsibilities.

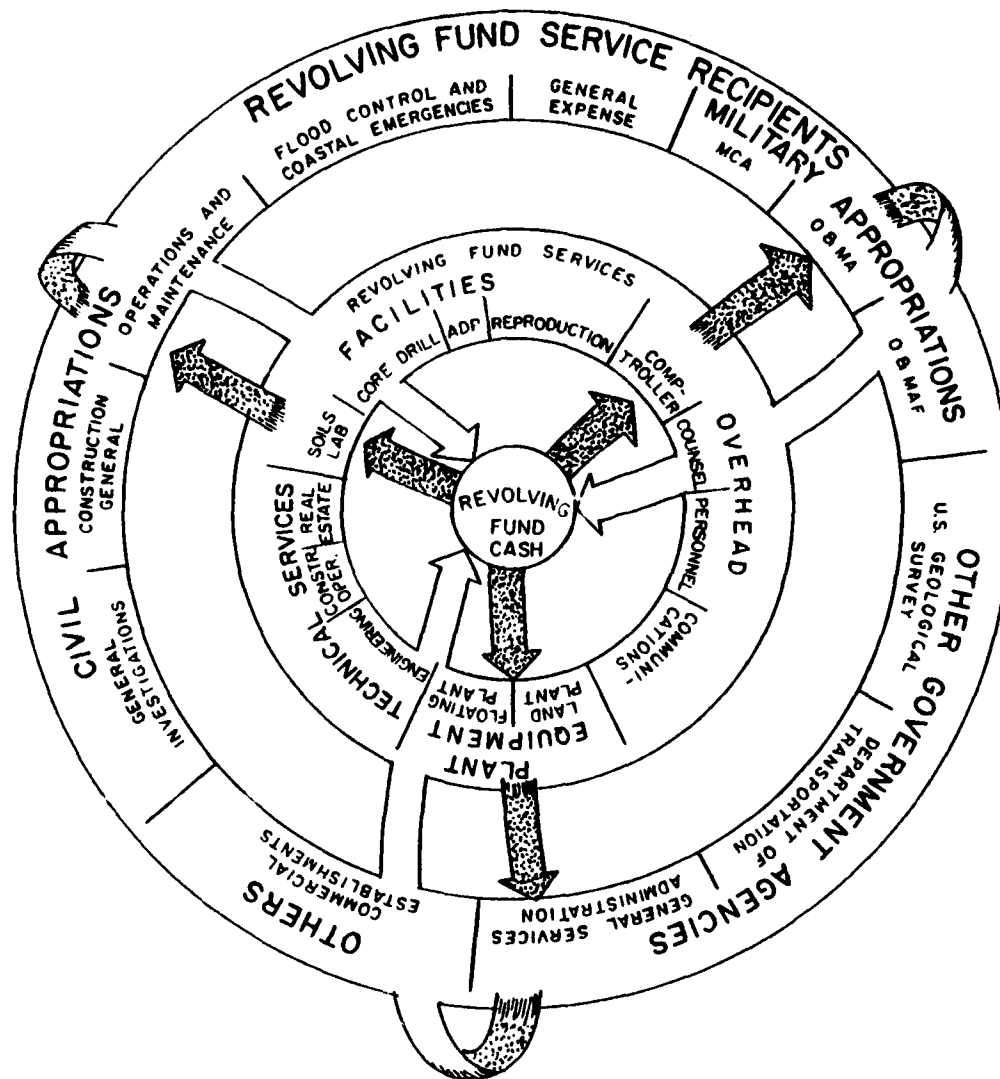


Figure 26. USACE revolving fund as a tool for meeting prompt funding requirements.

MESB documents the fiscal status of USAEA,CA with special studies and summary reports when needed; this branch prepares a Resources Management Plan (DA Pam 420-6) annually and a Manpower Utilization Report quarterly. MESB also generates a USAEA,CA quarterly review, supports RPMO operations with program reviews, performs workload evaluations and, most recently, prepares a monthly IJO activity report. In addition, MESB identifies needed ADP support to IMO and provides management analysis studies. Year-end duties require monitoring fiscal FE closure activities and generating a summary report named "Lessons Learned for Year-End Closure" at 30 to 45 days into the next fiscal year.

RMD Operations

Fiscal monitoring and control of USAEA,CA operations benefit from the form-driven environment of RPMA. The fiscal status of projects or operations is largely recorded and communicated by USAEA,CA on standard DA forms.

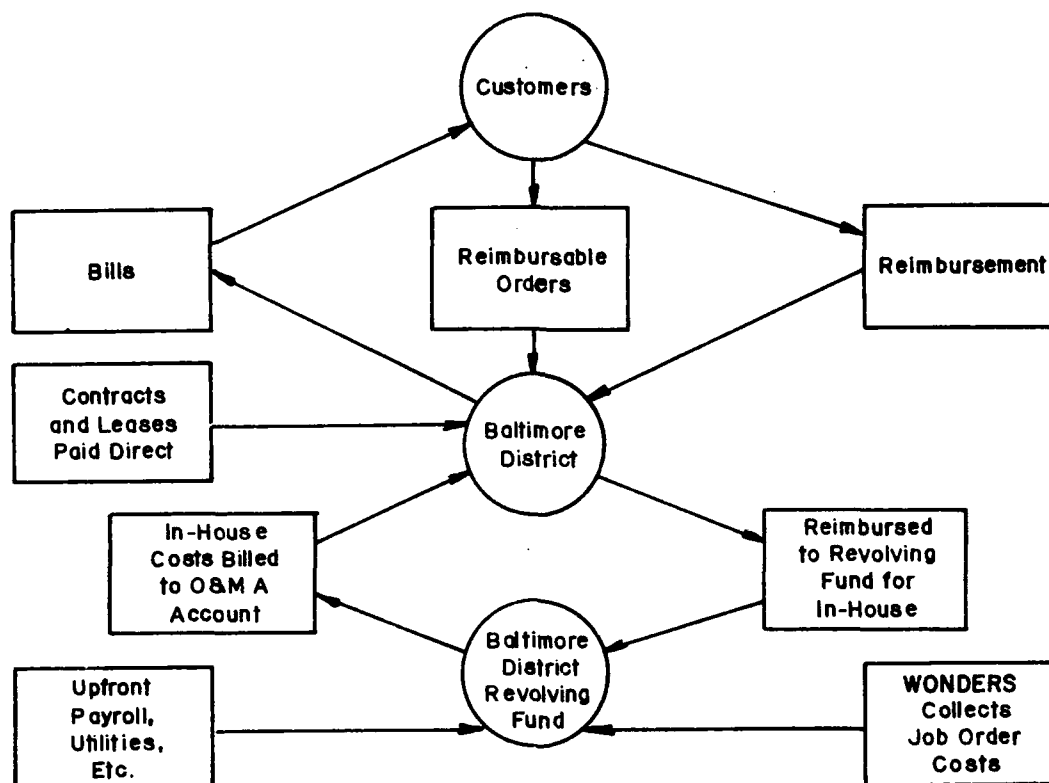


Figure 27. FMB functional interfaces.

A Job Order Request (JOR) or IJO need is communicated by the customer on a partially completed Work Request (DA Form 4283) and sent to the Work Reception Clerk at the appropriate RPMO. For an IJO, the field RPMO will process the Work Request, perform login and verification, and select the most appropriate evaluation route. This process may result in an in-house/BDE/ECD cost estimate that is provided to the customer to allow him/her to reaffirm the proposed work at the estimated cost and submit funding to RMD.

If in-house performance is preferred, the RPMO will determine all needed materials for the work on a Bill of Materials (BOM, DA Form 2702). The RPMO then acquires the materials from stock or orders them from SMD by forwarding the BOM. If contracted services are involved, the RPMO, ECD, or BDE will issue a new Purchase Request or Reimbursable Order (DA Form 2544) to BDE.

Projected workloads (known or statistical) are funded by each customer through an Inter-Army Order for Reimbursable Services or Reimbursable Order (DA Form 2544) that the customer generates and submits to USAEA,CA. This form (or equivalent) is a funding commitment by the customer and serves as an operations control vehicle for financial management. Normally, Reimbursable Orders are valid for only one fiscal year. Upon acceptance by USAEA,CA, the order is a funding obligation by the customer for the services requested. These procedures for accepting and processing the DA Form 2544 establish the functionality of the revolving fund.

Financial reports on the status of customer/project funding or current expenditure levels are provided to the RPMMs monthly and as needed by the FMB. Also, RMD prepares special management performance reports for the RPMM whenever RPM control problems arise.

Evolution of the Original RMD Plan

Overview

The potential for improved financial management and fiscal control of centralized RPMA support was recognized in the IPG's first planning stages. This planning relied heavily on District services when such support was estimated to be economical and productive. The IPG plan implied that USAEA,CA could grow and assume some of these responsibilities in a posttest environment. Even so, for Phase I, the planned RMD organization (Figure 28) was more encompassing than that implemented. The FY80 configuration of three branches and seven sections was functionally more extensive than the two branches eventually applied to Phase I operations (Figure 24).

During the early years of USAEA,CA implementation, there was a reliance on RMD for overcoming accountability and communication problems in areas not directly related to financial management. With the establishment of a reasonably steady-state operation, these special activities began to diminish.

RMD's focus has become more centered with time as reflected by the following organizational influences:

1. Application of the IPG plan became more tightly structured.
2. The Automation Section was upgraded to a separate Automated Systems Office.
3. The Installations Branch was eliminated from RMD when this branch's functions were delegated to DCSEH (MDW) after the USAEA,CA move from Fort McNair.

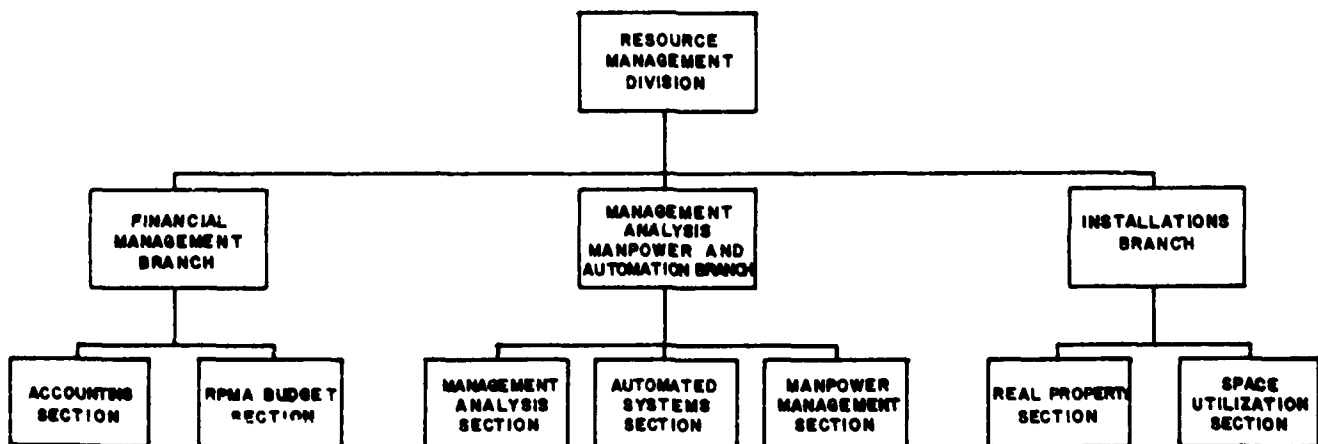


Figure 28. FY80 planned structure of RMD.

Operations Planning vs. Implementation

RMD procedures as planned by the IPG, the actual operations initiated, their development over time, and the current procedures were compared to identify disparities between the predicted or planned, and actual practice. The findings are described below.

Year-End Operations. These tasks were improved in FY87 by the issuance of clear guidance for phase-in/-out procedures, including limits to the acceptance of RPMA work that cannot be completed in the current fiscal year; the phase-out of jobs scheduled but not startable; and timely completion of ongoing jobs. These procedures allow for the orderly phase-out or carryover of active projects at the close of the old fiscal year, and a prompt budgeting and startup cycle at the beginning of the new fiscal year. Reimbursement of the revolving fund is a goal for this period.

FMB Procedures. FMB directs, coordinates, controls, and executes financial and budgetary operations for USAEA,CA. Some FMB procedures have been upgraded to reflect changing environments, new output requests or interface requirements, and applicable DA regulation changes. Procedural modifications were made from activation of USAEA,CA (FY81) to the conclusion of Phase I (FY86), including:

1. Funding--the revolving fund and DA Form 2544 access to this fund have not changed; however, the funding certification sent to BDE now includes a formal Document Transmittal Letter (NAB Ltr 1548) and the DA Form 2544 approved by the FMB Chief.
2. Accounting and budgeting--new procedures were issued for end-of-year phaseout and a prompt startup cycle at the beginning of the new fiscal year.
3. Customer billing--direct billing of customers by USAEA,CA was assigned to BDE since the automated billing system installed there was fully adequate for this task but was underused.

MESB Changes. MESB provides industrial engineering support services to USAEA,CA. The following procedural and product changes have occurred for the MESB:

1. ADP support--responsibilities for development and maintenance of automated systems were retained by the ASO and these services were improved in FY87 when the ASO was combined into the IMO.
2. Presentations--response to special report needs was improved (e.g., briefings for the Army Audit Agency and other appropriate agencies).
3. Management reviews--manpower level analyses are now prepared and records kept for USAEA,CA management reviews.
4. Monitoring and control--a new report in FY88 was the monthly printout "IJO Activity Report" for USAEA,CA management and RPMO review.

Control Documentation. In FY88 dollars, USAEA,CA supported an RPMA program of almost \$63M, requiring \$53M in DA Form 2544 reimbursable orders and \$10M in contracts on DA Form 3953 in FY86 (at the close of Phase I). The \$63M for FY86 can be compared in fixed FY88 dollars with FY84 at \$55M and the FY80 MDW baseline figure of \$28M.

Financial Management Support Operations

Management Objectives

Principal objectives of financial management for USAEA,CA operations are to develop an overhead rate, accept customer reimbursable orders, distribute orders for execution, bill quickly and accurately, verify availability of funds, and continually review orders to remain within specified limits and to ensure finalization.

Responsibilities

RMD's financial management is concerned with executing the customer program and generating or processing fiscal year monetary records. RMD operations will continue to include budgeting support, in-house and/or contracted RPMA support, and documentation or special fiscal reports. These services are enabled by "fiscal tools" applied by USAEA,CA to the RPMA task, and include the extensive and effective use of DA Form 2544, a callable funding source (the USACE revolving fund), and an excellent cooperative interface with the BDE.

RPMA Control. FMB's main responsibility is to generate and maintain fiscal documentation for RPMA monitoring and control. Key elements in processing financial report forms are identified in Table 7. The originator revises the DA 2544 or DA 3953 forms to more clearly reflect information or changed conditions. The sequence for processing forms in support of a specific RPMA job is shown in Figure 29. These forms are reviewed by FMB, and are described as follows:

DA Form 2544 (single-job)--a reimbursable order issued by the customer for each IJO requested, whether to be performed in-house or by contract. Processing of DA Form 2544 is detailed in Table 8. Each DA 2544 order is reviewed carefully by FMB as it is a unique contract between the customer and USAEA,CA. DA Form 2544 data are entered into COSMIC.

DA Form 2544 (blanket)--a reimbursable order covering a group of jobs to be requested by a customer for the quarter or fiscal year. It applies to RJO/SOO/PM scheduled work and also to the expected volume (rate) of similar types of SO work.

DA Form 3953 (contracts of \$25K or less)--request for quote (RFQ) or contract information issued by the planner/estimator of RPMO or (on request) by ECD for any IJO to be performed commercially through either a purchase order, a sole-source contract (less than \$1000), or open bidding. PR&C processing is identified in the sequential flow network of Figure 30. RPMA planning may be constrained by legal limits placed on the K and L account work, but FMB is primarily concerned about the total dollar amount of the DA Form 2544.

DA Form 3953 (contract greater than \$25K, less than \$100K)--contract information issued by the Planner/Estimator of BDE and also managed by the Baltimore District.

Summary Reports. These reports are special COSMIC outputs to track RPMA expenditures for overruns to DA Form 2544 limitations. These reports include:

1. Fiscal Year 2544 Register--a fiscal year log report of all DA Form 2544s which is provided periodically or upon special request, as needed, to RPMs, Division Chiefs, and other interested personnel.

2. USAEA,CA Fiscal Year Control Report--RPMA expenditures are recorded by customer or installation/post for in-house and contracted work, reflecting all FY expenses billed and obligations incurred against outstanding DA Forms 2544 and 3953. Contract amounts and labor/equipment costs

Table 7

Fiscal Control Document Distribution

DA Form	Name	Description	Inputs	By/To	Purpose
2544 (Single Job)	Inter Army Order for Reimb. Services (IAORS)	Funding for IJO needs	Est.cost; start date	Cus/FMB	Pre-edit; Assign. #/cd; Acceptance. Enter COSMIC and fund control.
				<u>Distribute to:</u>	
				• RPMO	Work Rec. Chief review; Job ID data input; RPM schedules or returns it.
				• BDE	Establishes a fin. acct. entry for the RS Order in COEMIS.
				• Customer	Notice that obligation is processed.
2544 (Blanket)	IAORS	Funding for RJO/SOO/PM/ SO tasks as appropriate	Estimated cost	Customer/ FMB	as above
				<u>Distribute as above plus:</u>	
				• OMD	SO control; SO cost limit checks; track of total expenses.
3953	Purchase Request & Commitment (PR&C)	For contr. after 4283 is OK'd	Reason/cost of procurement	RPMO/ FMB	Certify fund.; commit Cust.\$; add FESS # & enter into funds control; maintain file.
				<u>Distribute to:</u>	
				• BDE	Contract admin.
				• COR	Information
				• Cust.	Notice of funds spent.

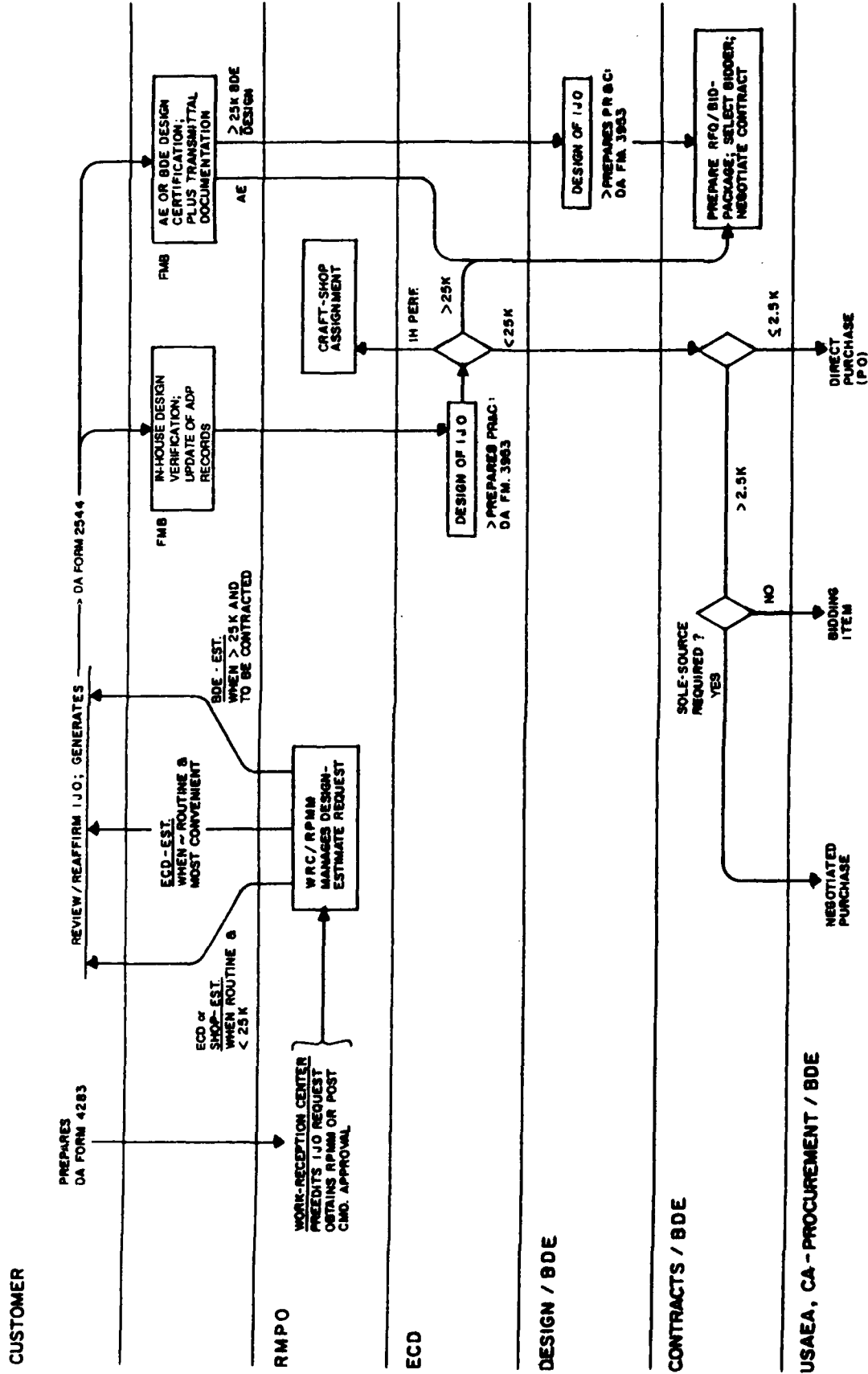


Figure 29. LJO documentation flow.

Table 8
Processing and Distribution of DA Form 2544

Development

Processing of the DA Form 2544 begins when the completed form is submitted to BDE (CENAC-RM-F) for acceptance. When assigned to the appropriate workstation, the DA 2544 is:

- Logged into a manual record.
- Assigned a DA 2544 Control Number from the Log Record.
- Assigned a reimbursable code.
- Checked to ascertain that the designated reimbursement amount is correct (especially if any change is involved).

The RF label and the dollars information are then entered into both the COSMIC and the Funds Control automated systems.

Acceptance

Acceptance (signature) is provided by RMD and the form is returned to its processing workstation for distribution.

Distribution

A signed DA Form 2544 is distributed as follows:

- Original - transmitted to BDE Financial Management via a Document Transmittal letter, NAB 1548, in a timely manner after acceptance of the DA Form 2544.
- Two copies - to the customer/requester
- One copy - to the RPMO
- One file copy - to the CENAC-RM-F
- One copy to SO

also are provided. This report information is updated continually until all provisions of the order are completed. A manual total of this report for FY86 (through August) is provided in Figure 30.

3. Billing Cycle Report--results in a total monthly bill for USAEA,CA services issued by the 25th of every month (except October, due to fiscal year startup).

4. IJO Activity Report (monthly)--provides a current status and scheduling plans for each active IJO in all USAEA,CA installations; Figure 31 is an example of one page from this report.

RPMA Procedures

Work and service orders are processed as shown in Tables 7 and 8, which provide the following information:

SO--service orders may be funded by one or more blanket DA Form 2544 for each customer from budgeting assessments at the beginning of the fiscal year; routine SOs do not pass through RMD review, but are a monitoring and control responsibility of OMD within USAEA,CA.

PM--preventive maintenance will be budgeted for the fiscal year and is funded by a blanket DA Form 2544; the RPMM is responsible for verifying all PM work.

RJO/SOO/PM--recurring job orders, standing operation orders, and preventive maintenance may be budgeted by a blanket DA Form 2544 for the fiscal year.

REPORT DATE: 9-2-86		MDW Fund Control (\$)				
ALPHA TOTAL FOR:	Installation Staff Engr.	Reimbursement of Customer	Housing	Other	MDW Total	Associated Forms
Amount of Reimbursable Order:	8,363,297	13,961,411	9,305,843	0	31,630,551	DA 2544
Expenditures: PR&C	1,268,420	2,617,980	2,067,036	0	5,953,436	DA 3953
Contracted	3,494,236	4,587,024	931,058	0	9,012,318	Contract
In-House	<u>3,366,920</u>	<u>6,589,166</u>	<u>6,282,635</u>	<u>59,842</u>	<u>16,298,563</u>	L&E Records
Total	8,129,576	13,794,170	9,280,729	59,842	31,264,317	
Difference or Available Funds:	+ 233,721	+ 167,241	+ 25,114	-59,842	+ 366,234	

REPORT DATE: 9-2-86		USAEA,CA Fund Control for Fort Myer (\$)			
ALPHA TOTAL FOR:	A	B	C	Fort Myer Total	Associated Forms
Amount of Reimbursable Order:	11,063,267	16,840,903	7,859,387	35,763,537	DA 2544
Expenditures: PR&C	1,753,985	3,224,287	2,439,486	7,417,758	DA 3953
Contracted	4,929,571	5,596,158	1,242,124	11,767,853	Contract
In-House	<u>4,136,553</u>	<u>7,838,738</u>	<u>4,138,235</u>	<u>16,113,526</u>	L&E Records
Total	10,820,109	16,659,183	7,819,845	35,299,137	
Difference or Available Funds:	+ 243,158	+ 181,720	+ 39,522	+ 464,400	

Figure 30. Aggregate DA Form 2544 summary report for USAEA,CA operations.

PROGRAM: ACTIVITYJC
DATE: 11/13/87
TIME: 08:00:40

RELATION NUMBER	DOCUMENT NUMBER	SHORT DESCRIPTION	DATE SUBMITTED	DATE JOR APPROVED	TO ESTIMATING/ DATE-COMPLET	TO MAT COORD/ DATE-COMPLET	TO SHOP/ DATE-COMPLET
11605	AG000325J	EXPANSION STUDY POAC	84/07/07	84/08/03	/ /	/ /	/ /
<p>PERCENT EXPENDED</p> <p>-----</p> <p>OCT--NOV--DEC--JAN--FEB--MAR--APR--MAY--JUN--JUL--AUG--SEP</p> <p>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</p>							
<p>TOTAL ESTIMATED</p> <p>-----</p> <p>DOLLARS</p> <p>\$14,200</p>							

RELATION NUMBER	DOCUMENT NUMBER	SHORT DESCRIPTION	DATE SUBMITTED	DATE JOR APPROVED	TO ESTIMATING/ DATE-COMPLET	TO MAT COORD/ DATE-COMPLET	TO SHOP/ DATE-COMPLET
11605	AG000327J	REPAIR PIPING TO CHILLER	87/01/08	87/02/10	/ /	/ /	/ /
<p>PERCENT EXPENDED</p> <p>-----</p> <p>OCT--NOV--DEC--JAN--FEB--MAR--APR--MAY--JUN--JUL--AUG--SEP</p> <p>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</p>							
<p>TOTAL ESTIMATED</p> <p>-----</p> <p>DOLLARS</p> <p>\$1</p>							

RELATION NUMBER	DOCUMENT NUMBER	SHORT DESCRIPTION	DATE SUBMITTED	DATE JOR APPROVED	TO ESTIMATING/ DATE-COMPLET	TO MAT COORD/ DATE-COMPLET	TO SHOP/ DATE-COMPLET
11605	AG000337J	REPLACE GLASS NDU LIBRARY	87/02/06	87/02/06	87/02/06	87/02/06	/ /
<p>PERCENT EXPENDED</p> <p>-----</p> <p>OCT--NOV--DEC--JAN--FEB--MAR--APR--MAY--JUN--JUL--AUG--SEP</p> <p>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</p>							
<p>TOTAL ESTIMATED</p> <p>-----</p> <p>DOLLARS</p> <p>\$551</p>							

RELATION NUMBER	DOCUMENT NUMBER	SHORT DESCRIPTION	DATE SUBMITTED	DATE JOR APPROVED	TO ESTIMATING/ DATE-COMPLET	TO MAT COORD/ DATE-COMPLET	TO SHOP/ DATE-COMPLET
11605	AG000346J	DEMOLISH TEMPOS A 3 B	86/01/07	86/02/10	/ /	/ /	/ /
<p>PERCENT EXPENDED</p> <p>-----</p> <p>OCT--NOV--DEC--JAN--FEB--MAR--APR--MAY--JUN--JUL--AUG--SEP</p> <p>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</p>							
<p>TOTAL ESTIMATED</p> <p>-----</p> <p>DOLLARS</p> <p>\$2,300,775</p>							

Figure 31. Example FY88 monthly IJO Activity Report.

IJO--individual job orders may not be known at the fiscal year start. Large IJOs are funded by individual 2544s. For in-house and contract jobs, the RPMM and ECD, respectively, must verify work completion.

Customer Billing

BDE interfaces for customer billing were shown in Figure 27 from a District perspective. The interrelationship between installation customers, the Army Operations and Maintenance P7 (O&MA P7) Reimbursable Account, and the revolving fund as controlled by BDE is sometimes called the "1080 billing process" because it uses Standard Form 1080.

ADP Support to RMD Operations

COSMIC Support. COSMIC provides status and cost data processing for USAEA,CA operations. COSMIC modules that support financial management (cost accounting) and funds management (cost billing) are:

1. BILL: USAEA,CA customer billing records which create transactions for COEMIS/STANFINS.
2. CONTRACT: contract cost reporting.
3. LEADGOLD: labor, equipment, and overhead cost reporting.
4. WONDERS: work order job/scope information.
5. FUTURES: FE job evaluation data

WONDERS Enhancements. WONDERS is a module of COSMIC but was developed as a stand-alone and is a mainstay to USAEA,CA operations. Two additions to WONDERS have enhanced its capabilities:

1. MERT--advanced the usefulness of the WONDERS data base by allowing Multiple Expense and Records Transaction services.
2. Reimbursable Orders--a report request that extracts detailed job cost and civilian labor data from the WONDERS data base and summarizes it to a level compatible with DA Form 2544.

Records Review. FMB maintains year-to-year and end-of-year records of RPMA expenditures in the File Management System, with entry or summary printouts provided to USAEA,CA and BDE upon request. Figure 30 shows example FY86 cost summaries of RPMA expenditures for both MDW and INSCOM.

Efficiency of Financial Management Services

The basic financial management services of USAEA,CA are funds verification and fiscal monitoring or fiscal guidance. A data records assessment shows the continuing effectiveness of FMB and MESB in supporting USAEA,CA operations. Selected indicators of this effectiveness are the number and cost level of operations supported, delays in logging data, levels of error-free input records, and similar measures.

Budgeting

The planning effectiveness of USAEA,CA in the expenditure and recovery of funds is evident in the development of an increasingly accurate repayment schedule for the revolving fund. The plot shown in Figure 32 reflects early underassessment problems and revision of the process to recover the carryover debt, identify expenditure levels, and levy accurate RPMO charge rates.

USAEA,CA Total Overhead

Before the advent of USAEA,CA, RPMA program costs (FY79) for the NCR installations were \$44M, with the estimated overhead at 17.9 percent; by FY83, the centralized RPMA had risen to \$53M and the overhead had dropped to 15.3 percent.

The developmental and testing environment under which USAEA,CA has performed does not permit controlled overhead reduction studies. However, RMD's budgeting and cost control services and RPMO's dedication have achieved overhead levels that are improved (lower) and determined more accurately than before (developed from actual RPMA cases).

Status Evaluation

RMD has provided strong general support and has helped raise the quality of RPMA financial controls during the test periods for Phase I and II USAEA,CA consolidations. The use of "fiscal tools" has improved the financial management procedures and advanced the centralized RPMA concept. With these fiscal tools, a high level of fiscal control, responsible use of the DA Form 2544, effective support to the revolving fund, and an excellent cooperative interface with the BDE have evolved.

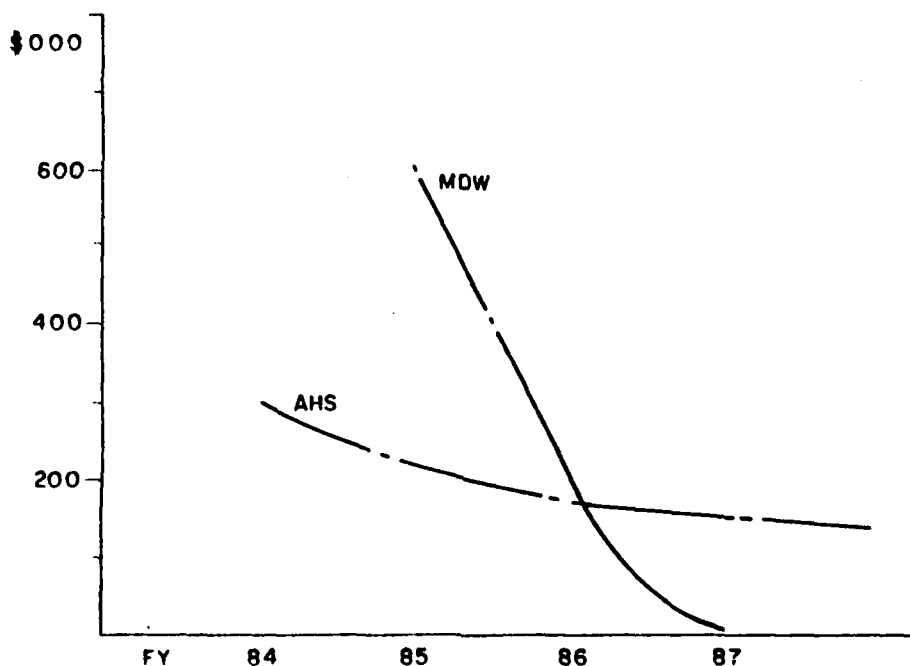


Figure 32. Improvement trends in end-of-year levels of nonrecovered RPMO funds.

6 SUPPLY MANAGEMENT

Acquisition, control, assignment, and delivery of required materials in a reliable and timely manner are essential to providing a responsive RPMA service. Supply, as a part of this service, is provided by the SMD of USAEA,CA; SMD is physically located in Warehouse Building 9 at Cameron Station, VA.

The present SMD organizational structure is shown in Figure 33. The relationship of the Central Supply Organizations to the installation/post RPMOs serviced by USAEA,CA is shown in Figure 34.

Scope of Current Operations

SMD is responsible for providing materials and equipment required in the operation and direct support services of USAEA,CA. To support RJOs and SOs, SMD keeps a stocked warehouse for anticipated usage; support for IJOs is met either from warehouse stocks or by requisitioning nonstocked items from qualified suppliers. SMD processed nearly 20,000 BOM items in FY87.

SMD Present Configuration

The property control, recordkeeping, storage, and delivery functions necessary to meet USAEA,CA requirements are performed by the centralized operations of four SMD branches as shown in Figure 33; the duties of each branch are summarized below.

Stock Record Accounting Branch (SRA). This branch receives and edits all requests (i.e., a BOM on a DA Form 2702), and then determines the appropriate sources for these supplies; SRA also maintains inventory records, including automated records input.

Property Book Accounting Branch (PBA). This branch uses hard-copy procedures (by regulation) for maintaining property accountability.

Storage Branch (STO). This branch receives, records, stores, and issues requisitioned materials.

Material Coordination Branch (MCB). This branch identifies and segregates received or stocked materials according to the post for which they were requisitioned; holds these materials until individual job BOM and scheduling requirements are satisfied; notifies the concerned RPMM of job materials availability; and transports the assigned lot to a corresponding Post Issue Point to await release to an authorized shop requester.

Supply Operations Overview

Requisition. Briefly, the customer requests work through the ISE or directly to the RPMO which will determine the mechanism for its completion and the materials/equipment needed. The equipment needs are documented and forwarded to SMD for review and monitoring; the materials requirements are forwarded to the BDE Procurement Section (in the same area) for purchase. Vendor-delivered materials are accepted and assembled by SMD to be delivered to the RPMO as requested.

Control of Materials Flow. Figure 34 shows the key role of the SRA Branch in monitoring and controlling the flow of materials and supplies.

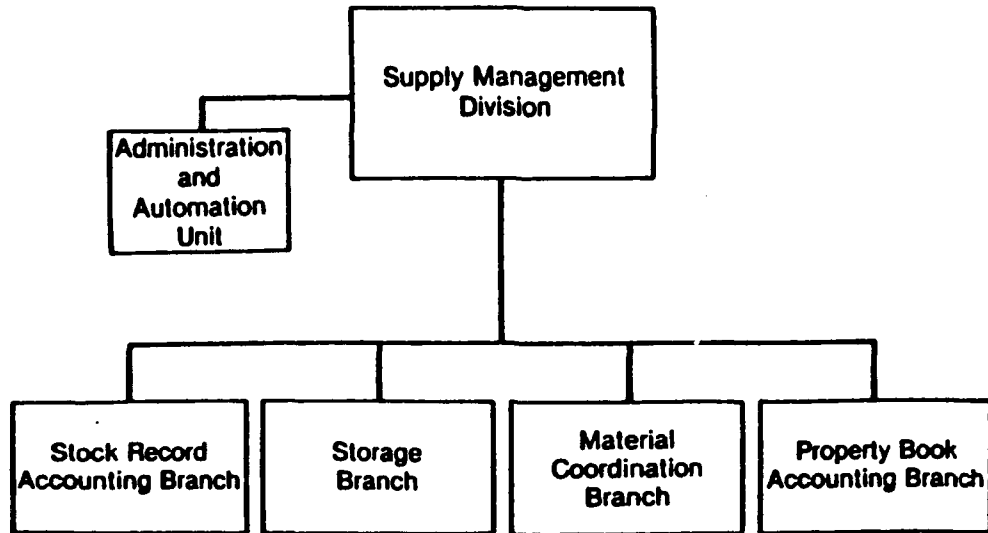


Figure 33. Organizational chart for USAEA,CA SMD.

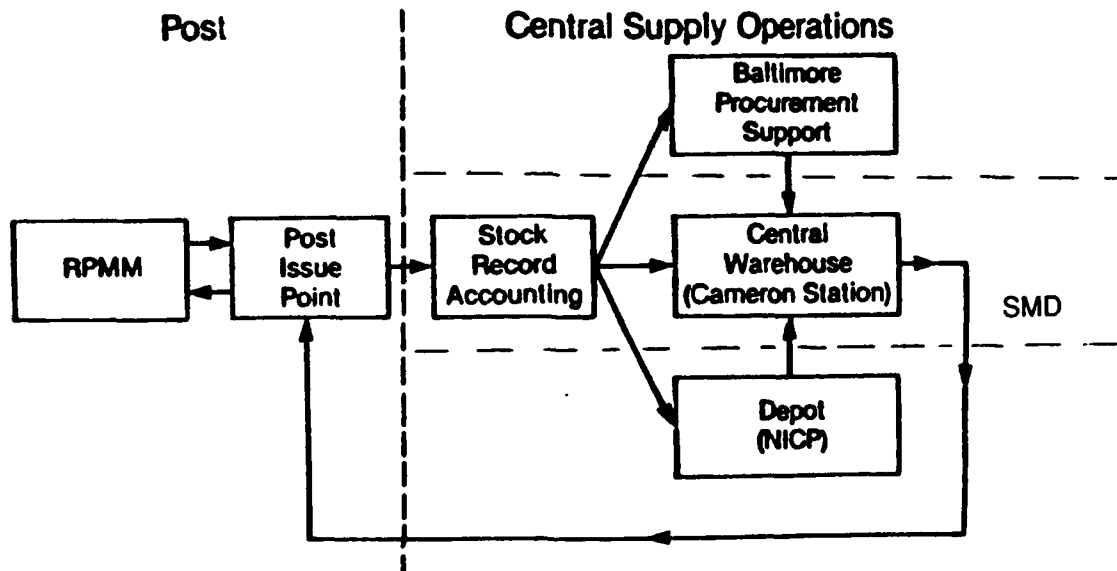


Figure 34. Materials and information flow for the RPMA supply process of USAEA,CA.

Reimbursement--Customer Billing. Customers are billed for USAEA,CA-furnished supplies and services. The cost and billing records are acquired and processed as shown in Figure 35. Information on materials supplied to in-house or contracted RPMA is keyed into the automated FESS along with associated job order numbers. After preprocessor checking, a tape is made of these transactions and, with other data, is entered into the Standard Army Intermediate Level Subsystem (SAILS), and automated tracking system for USAEA,CA funding accounts. SAILS generates identifier codes for each cost as preparation for batching this information (three times/week) to the RPMA customer billing process at BDE. To assist in funding supplies, MDW maintains a stock fund (monitored by a Stock Fund Budgeting Officer) which is used to acquire needed materials pending reimbursement by the Standard Form 1080 customer billing process.

Evolution of SMD From IPG Plan

Historical Synopsis

Creation of the original Supply Division of USAEA,CA from MDW DCSEH and DCSLOG sources was followed by a managerial and physical consolidation that took 2 years to complete. Deliveries became an in-house function; all procedures were streamlined and reorganization plans to become the SMD were developed in FY83. BDE established an interfacing procurement annex to SMD for Phase I support in FY83, followed by the introduction of automated communications in FY84. A full-scale FESS was brought online in FY82, linked to IFS in FY83, and used in preparing and recording BOMs in FY85. The SMD reorganization was implemented and a totally "closed warehouse" (restricted access) was achieved in FY84. New automated systems were developed, integrated, and applied, with COSMIC being accessed in FY85 and the Wang Office Information System (OIS) placed in service in FY87. Table 9 lists major SMD events during the consolidation.

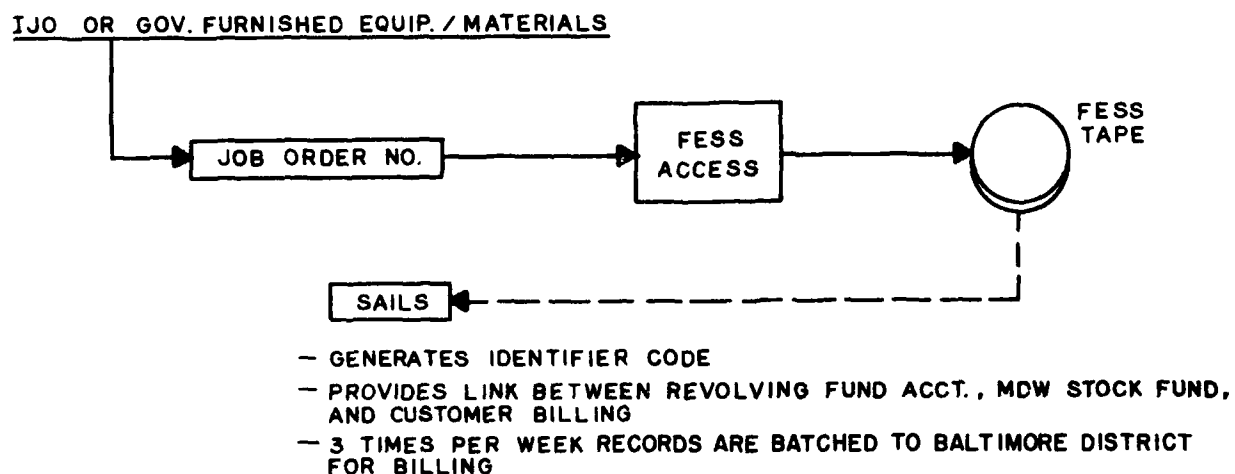


Figure 35. Cost and billing records flow.

Table 9

SMD Significant Events During Consolidation

FY81

EA,CA activated.
DCSEH/EACA Property Book Accounting Branch organized.

FY82

Moved Receiving and Warehouse operations to CS, Bldg. 9.
Access to FESS; started FESS II training.
Installed "dual system" - FESS and manual operations for 3 months, followed by full-scale FESS use in June.
Access to National Inventory Control Points (NICP).
BDE Supply Procurement support established at CS.
MDW Self-Help Supply Centers established.
Material Coordination function transferred from OMD to SMD.
Automated reports and an automated priority designator established.

FY83

Blanket purchase agreement (BPA) use dropped.
Discontinued Engr. Supply Annexes.
Installed automated NICP status program into FESS.
Replaced contracted supply/mail delivery with a more reliable in-house system.
FESS linked to IFS; USAEA,CA unique FESS initiated.
Automated archiving of supply transactions.
Online development of automated Property Book started.
Access provided to automated Transaction Register of BDE Procurement.
Shop Stock Program implemented.
SMD storage reorganization implemented.

FY85

Warehouse storage, requisition and security methods improved.
Bill of Materials (BOM) preparation automated.
Access to COSMIC at USAEA,CA HQ.
Purged warehouse of excess/obsolete stores.

FY86

Improved/coordinated follow-up actions.
Fort Belvoir supported on Self-Help and mission accounts.
Parts of Master Logistics Support System installed.

FY87

Wang OIS (VS) brought online.
Material Expeditor positions created.
FESS update.

IPG Directions

In FY80, when the IPG surveyed all potential site supply systems for use in USAEA,CA, nothing was found at the scale and effectiveness believed needed. Although the MDW consolidated supply system was in place at Cameron Station at that time, it was thought to be inadequate for a centralized distribution system at the level of USAEA,CA. Further, since the DCSLOG-operated system preceded introduction of the FESS computer support, it appeared that a resident capability did not exist for growth to the larger role of meeting all USAEA,CA supply and cost tracking needs. In addition to the lack of ADP support, USAEA,CA supply management was in a transitional state during FY80, moving from DCSLOG to DCSEH in MDW as a preliminary step to final assignment in the Supply Division of USAEA,CA on 1 October 1980.

Transferring the function to DCSEH permitted early incorporation of organizational changes as well as development of realistic plans for a consolidated USAEA,CA supply function. The decision to transfer the supply function to DCSEH was made in May 1980, followed by a DCSEH study to determine how the transfer was to be made. The DCSLOG control system was phased out when FESS was brought online in December 1980. Since a centralized engineer warehouse was a key to SMD planning, the engineer supply function of the DCSLOG warehouse system was transferred when such a facility became available.

SMD Support to Phase I Testing

SMD's experience in providing materials for RPMOs at the MDW/INSCOM installations resulted in a functional organization that used manual and automated procedures according to developing needs and increasing access to automated systems support.

The New FESS Support. A dual system with both manual and FESS operations was implemented for main and satellite warehouse operation when the prototype FESS was introduced in March 1982, with full-scale FESS support coming just 4 months later. Extensive FESS training was conducted between FY81 and FY83.

A plan to automate the BOM procedure was initiated when the word processing module of FESS became available (1985). It was hoped that eventually all BOM information could be transmitted electronically from an RPMO source to Supply/Procurement; this automation is still a goal.

Added Responsibilities. Material coordination functions were transferred to the RPMO to improve communications, and then to SMD in FY82 to allow better materials management control at every level.

New Interfaces. The BDE Procurement Annex became active at Cameron Station at the end of FY82. Several of SD's interim practices (e.g., use of Blanket Purchase Agreements) were discontinued at this time.

Adequacy of Planning for Supply Operations

The adequacy of supply operations planning by the IPG was evaluated by reviewing the changes made for USAEA,CA implementation and for the test operations of Phase I consolidation. The findings are summarized below.

Implementation Changes. The IPG intended for the supply function to be implemented within USAEA,CA over time, as a "service in transition." Implementation required the transfer of MDW supply systems and personnel and the use of adaptation/ retraining procedures to meet the needs of a USAEA,CA supply operation. The emphasis was on basics initially while MDW personnel were being

transferred to fill a nominal SD configuration. The USAEA,CA Property Book was maintained by creating a Property Book Accounting Branch (March 1981); improvements in efficiency by consolidating or dropping remote resources were expedited.

Phase I Consolidation Support Changes. The functional requirements of supply procedures and the need for support to the RPMO did not change between IPG planning and the end of Phase I; personnel expertise, upgraded methods, and the redefining of interfaces did impact operational details, however, as indicated in Table 10. This table shows the differences between planned (Figure 36) and actual Phase I (Figure 37) operations in SMD. All SMD branches are identified by function in the table.

In the planning process, four functional areas that were apparently not considered in FY80, but were of specific interest to Phase I installations, are (1) control of IJO BOMs (2) control of IJO physical equipment/materials; (3) interfaces with National Inventory Control Points, the Defense Reutilization and Marketing Officer, and others, and (4) the potential for automated communications among USAEA,CA HQ, the RPMOs, SMD, and Procurement.

SMD Support to RPMA

RPMA Supplies

Supplies for In-House SOs. Prompt performance of SO work requires the availability of commonly requested materials at each shop. Usage of these materials is controlled for each craft shop by a Shop Stock List (SSL) maintained by SMD. This list ensures that supply withdrawals are consistent with the tasks to be performed. The SSL is now automated for monthly updates to reflect actual experience. The SSL contains enough information for managing shop stock, including descriptions, stockage levels, reorder points, prices, and stock numbers.

In the current SMD procedure, all shop stock is replenished by annotating a copy of the SSL and handing it to the Engineer Materials Issue Person (EMIP). The EMIP then verifies the order and enters it into FESS. FESS automatically generates issue slips (like a DD Form 1150) to be used by the Storage Branch for release of materials.

Billed Supplies for In-House RPMA Work. Work orders are processed as shown in Figure 38. When materials are needed that exceed the SO shop stock, requests must be made through the EMIP for approval and identification of the best source for each item. Supply source alternatives are:

1. Central Warehouse--the Storage Branch will complete each DA Form 2702 line item that is in stock and unassigned.
2. USAEA,CA Procurement Office at BDE--this office can purchase materials locally through various contracts. FESS is used by the Stock Record Account (SRA) procedure to record the request and provide data to BDE.
3. Government Supply Agency (GSA) and Army Depots--many types of materials can be acquired from the nearly 150 GSAs and Army Depots accessible to BDE. Requests are processed through FESS and forwarded through the Defense Logistics Agency (DLA), where they are mailed electronically to the proper depot via the Defense Automatic Address System (DAAS).

Table 10

Development of Supply Under USAEA,CA

<u>IPG Approach</u> <u>Functional Assignments</u> <u>for FY80</u>	<u>Phase I Approach</u> <u>Functional Assignments</u> <u>FY84 FY87</u>
Supply Division:	<u>Supply Mgt. Division</u>
Property Control Branch:	<u>Property Book Accounting (PBA) Branch</u> Same + Autom. Prop. Book
Fin. Inventory Acct. Section - Stock record acct. Vouchers filing.	<u>Stock Record Accounting (SRA) Branch</u>
Requisition Section - Authorized stockage list Initiate requisitions & PRCs Assure due-in/-out records Keep stock record account Stock management.	Same + Same FESS enhancements BOM
Receipt Station - Posting transactions by computer Reconcile due-out with using activity.	<u>SRA/STO Branches</u> Same Same
Storage Branch:	<u>Storage (STO) Branch</u>
Receipt Section - Verifies inspection documents and delivery receipts Provides authenticated receipts to FIA Section Releases delivered material to Whse. Storage Section Maintains running inventory records.	Same Same
Warehousing Storage Section - Maintains location system Locates/places received items Picks/pulls/delivers items Performs physical inventory Returns signed delivery ticket to Issue Section.	Same Same
Storage Branch:	<u>STO/PBA Branches</u>
Issue Section - Receives issue document from FESS Forwards Same to Storage Section Verifies material against this issue document Forwards signed issue document to FIA Section (PC Branch).	Same Same
Stock Issue Points - Receives/holds/issues RPMA supplies Maintains ship stock levels.	<u>Material Control Branch (MCB)</u> Same + Same Rev. SS Pgm.
<u>O&M/RPMO:</u>	<u>MCB</u>
Coordinates materials	Same Same

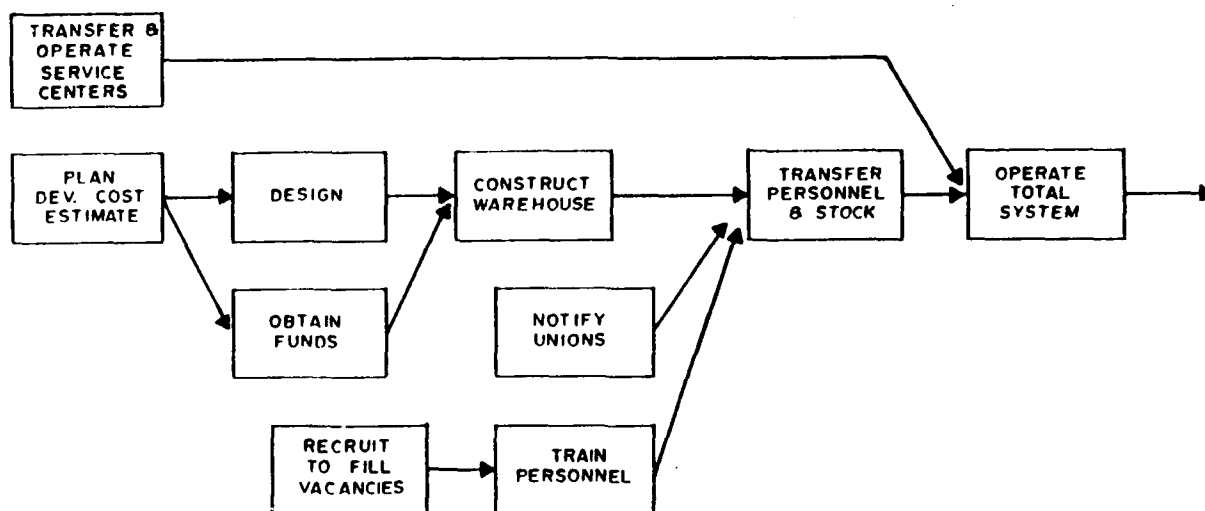


Figure 36. Planned warehouse system for SMD.

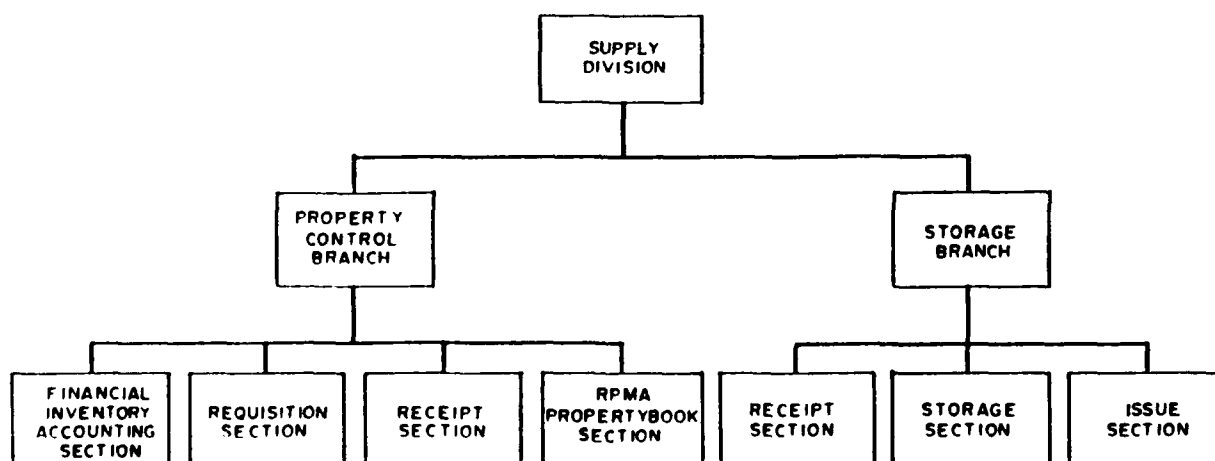


Figure 37. The Supply Division as organized in FY82.

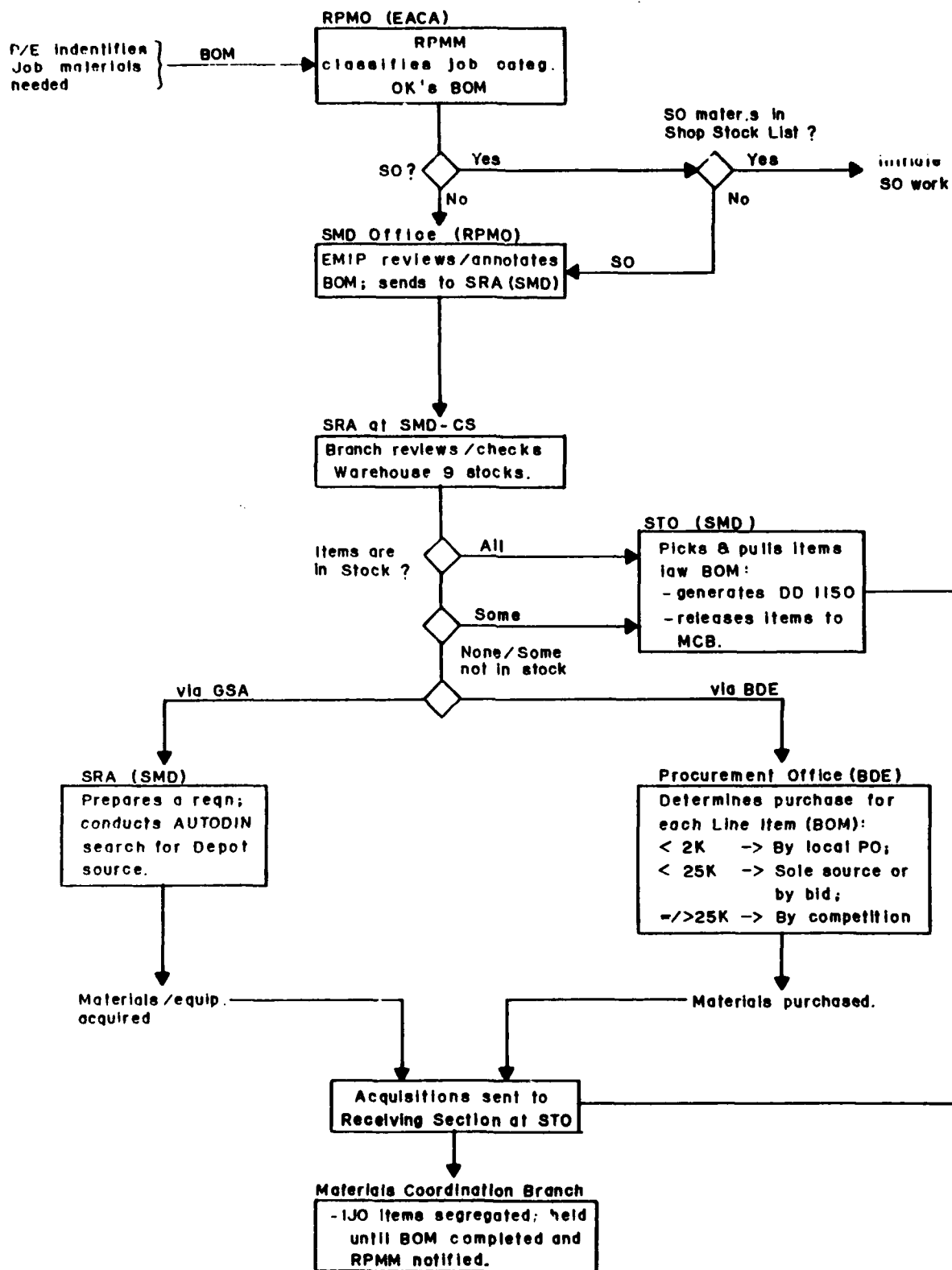


Figure 38. SO/JOR processing for materials acquisition.

Dedicated Materials

IJO materials have a segregated storage location and are held until everything for the job is received. The sources for acquiring supplies for IJOs are unrestricted except for the use of Shop Stock.

Acquisition. If materials are requested on a BCM (DA Form 2702) and are obtainable from regular warehouse stocks, the Storage Branch pulls the listed items from stock and prepares a "Request for Issue or Turn-in" (DD Form 1150). Information on the Form 1150 is also keyed into FESS, again resulting in the generation of issue slips. Materials and their issue slips are then turned over to MCB.

If the BOM materials are received by shipment (via local purchase or GSA), the Storage Branch verifies the order and segregates materials as received for the specific job assignment of the POM (i.e., by Work Order Number). A separate DD Form 1150 is prepared for each lot of materials released to a job; data from DD Form 1150 and from the purchase order are entered into FESS. The materials and 1150 documentation are then released to MCB. For all but IJOs, job-specific (and stock item) materials are disbursed immediately by MCB to the proper installation.

Handling. When all materials for an IJO are received, MCB sends a message to the installation RPMO (scheduler) and to the EMIP at the post holding area, notifying them that job material is ready for transfer. This information is also entered into FESS which, in turn, relays this update to COSMIC for JOR/IJO status reporting. IJO materials are delivered to the post holding area by MCB when requested by RPMO; after the job is scheduled by RPMO, the materials are released by the EMIP and transferred to the jobsite by the RPMO.

Supplies to Contracted RPMA

In providing support to contracted RPMA, SMD may be required to supply Government-Furnished Equipment (GFE). The procedure is the same as for in-house performance, only delivery is to the contractor instead of an RPMO. Reimbursement procedures remain unchanged. (Increasingly, contractors are encouraged to obtain their own supplies, so that this task is not one of SMD's major preoccupations.)

Efficiency of Supply Service

The quality of the current SMD supply service and SMD's contribution to the overall USAEA,CA performance were evaluated in terms of several key efficiency measurements. The findings are described below.

Cost Management

The added cost of supplies due to SMD handling and storage is being reduced. The "markup" or overhead cost incurred by the Supply Division in FY82 was \$25 for every \$100 of materials purchased; this figure dropped to \$15.56 per \$100 in FY87. Some budget overruns were charged to SMD for FY82 (14.5 percent) and for FY85 (20 percent); however, SMD was well within budget in FY86 and FY87.

Use of Warehouse Space

SMD has used its allotted warehouse space very effectively. After centralization, SMD achieved a better than 50 percent reduction in warehouse floor space (Table 11).

Table 11

Facility Engineer Warehouse Space (1000 sq ft)

Facility	Initial	Present	Savings in Sq Ft
AHS	11.4	4.2	7.2
CS	2.7	0	2.7
Fort McNair	4.7	0.7	4.0
Fort Myer	12.2	1.6	10.6
Main Warehouse-9	16.5	16.5	0
Total	47.5	23.0	24.5

During Phase I, the number (and cost) of stocked line items increased. Figure 39 shows that the planned increase ran from a low of 4100 items in FY84 to 5420 items in FY86; typical processing volumes are shown by line-item levels of the plots in Figure 40 for warehoused items. These items are classified according to whether they are inventoried, regularly stocked, or available (unassigned) stocks.

When SMD storage space was at a line count of 4100 in FY84, the estimated future need was placed at 6000. However, the FY87 line count is placed at 5420. The number of lines can be converted into appropriate storage configurations using DOD Manual 4145.19-R-1 (for bins, pallets, and racks),¹⁷ resulting in 23,500 sq ft for the initial load and 34,400 sq ft for the predicted load; the current actual total warehouse space is 23,000 sq ft, just below the initial load level estimated by IPG. An explanation of this could be that IPG initial load estimates are not accurate for USAEA,CA operations; also, the DOD Manual may not be generous in allotting space when the very high current land/space values in East Coast populated areas are considered.

Maintenance of Stocks

SMD Central Warehouse-9 Stocks. The warehouse at Cameron Station is stocked in accordance with a continuing FESS evaluation of what is requested. Despite automated reminders and a prompt reordering of depleted or heavily reserved items, at any given time, some stocks fall to a zero balance. The strategies for maintaining a positive stock balance have steadily improved. Although each fiscal year quarter has a different restocking environment, zero-balance items have declined consistently over 5 successive years. Figures 41 and 42 show the level of zero-balance line items plotted against time (quarters) for FY84 through FY87. Figure 43 indicates that, on average, about 6 percent of the items in the SMD inventory now will reach a zero balance, whereas 3 percent is a developmental target value.

Maintenance of Shop Stock. An informal survey of MDW and INSCOM RPMOs revealed no complaints about the current maintenance of shop stocks by SMD. The stock resupply goal for all shops is to provide a minimum of 15 days of supplies. This strategy has worked well in providing adequate support to the RPMOs.

¹⁷ DOD Manual 4145.19-R-1, *Storage and Warehousing Facilities and Services* (Department of Defense [DOD], 13 August 1975).

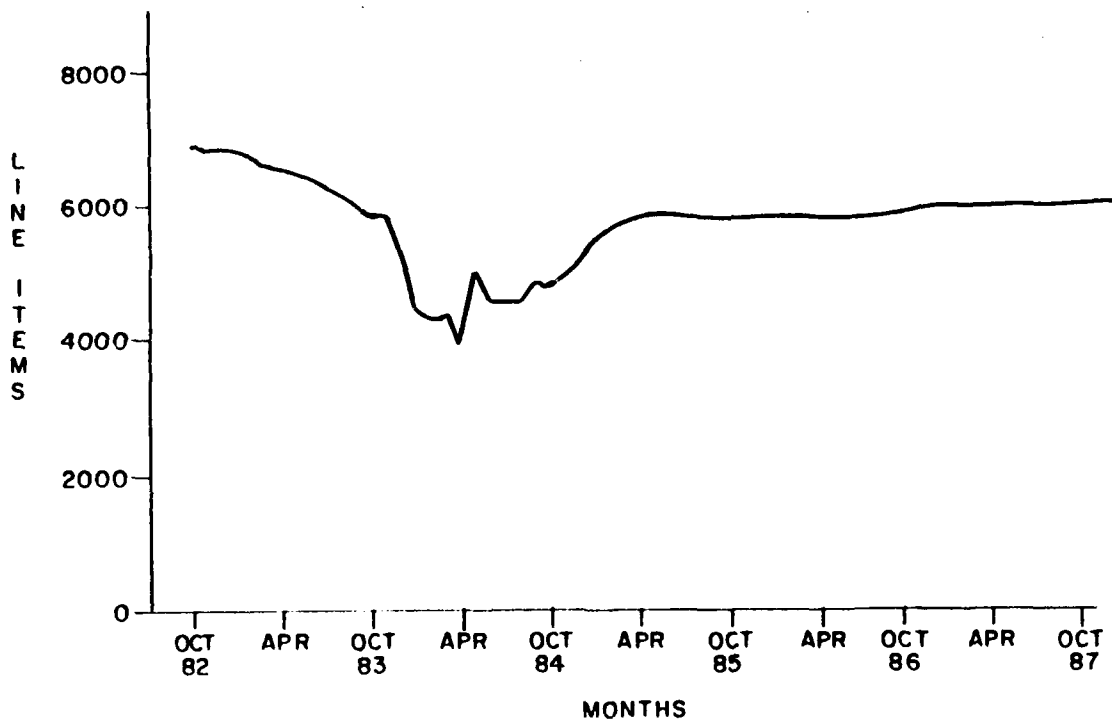


Figure 39. Line items stocked in the Central Warehouse of SMD (FY85).

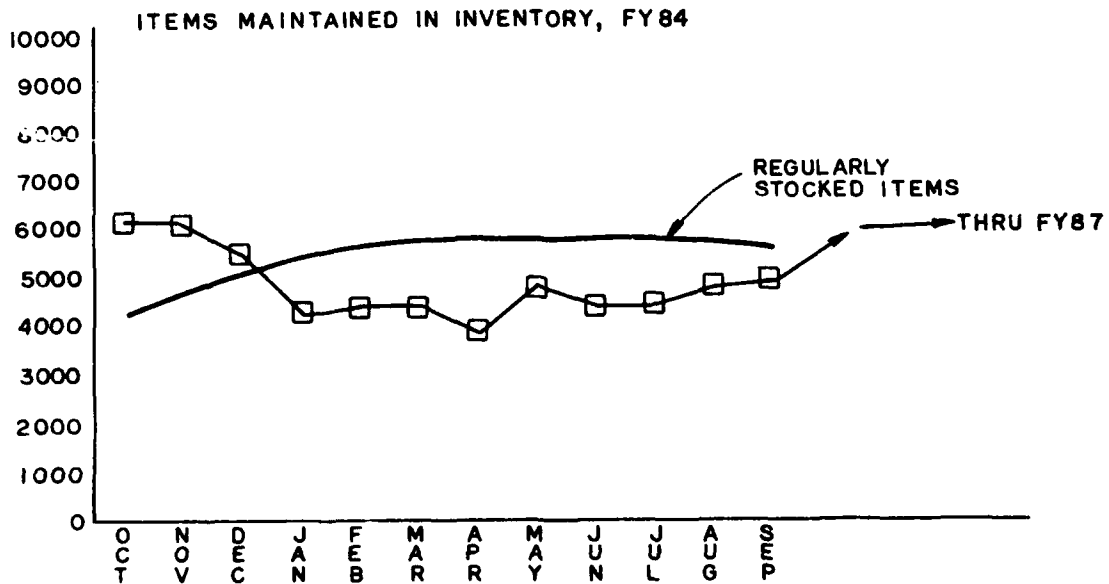


Figure 40. Monthly variation of items maintained in inventory by SMD, FY84.

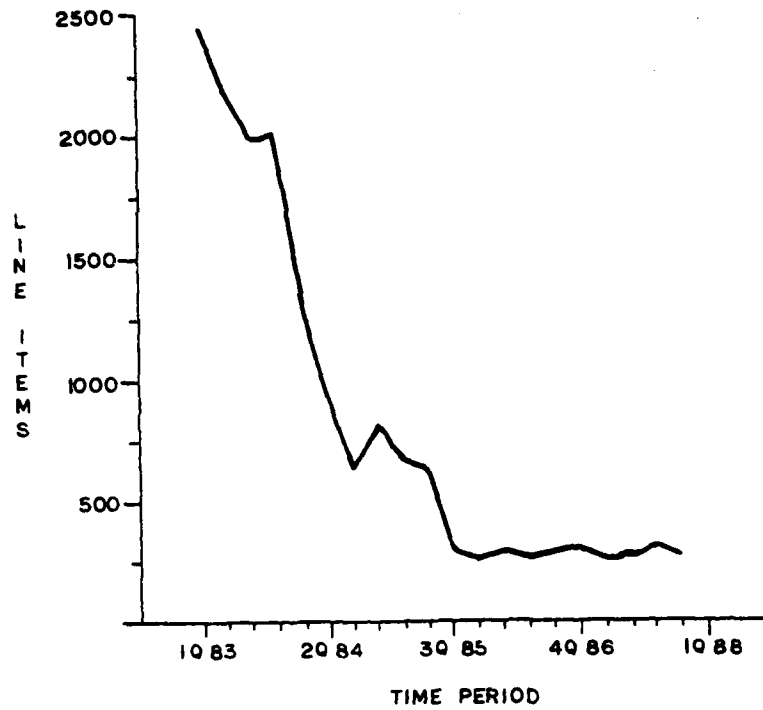


Figure 41. Decline in zero balance warehouse items, FY83 to FY88.

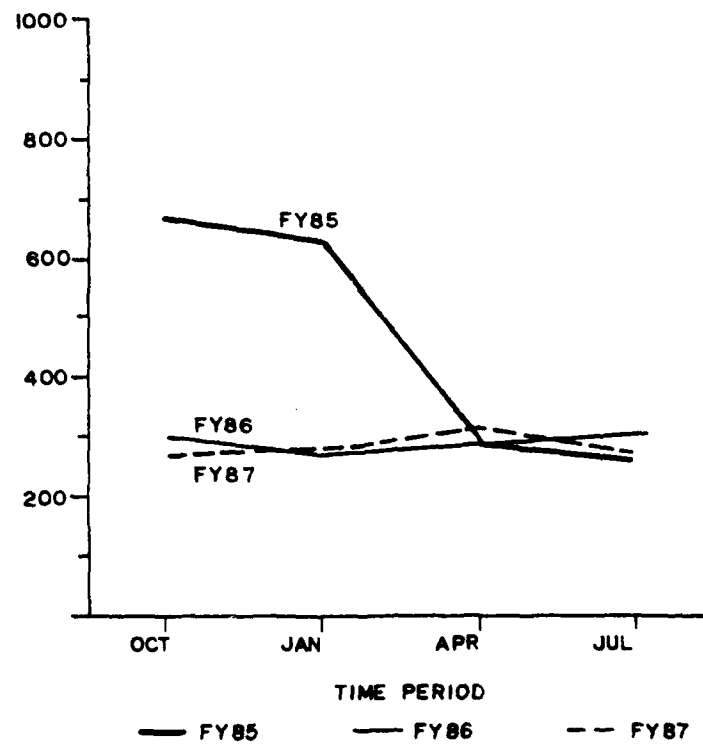


Figure 42. Improvements in the line items stocked at zero balance (depleted stock) at fiscal year close (FY87).

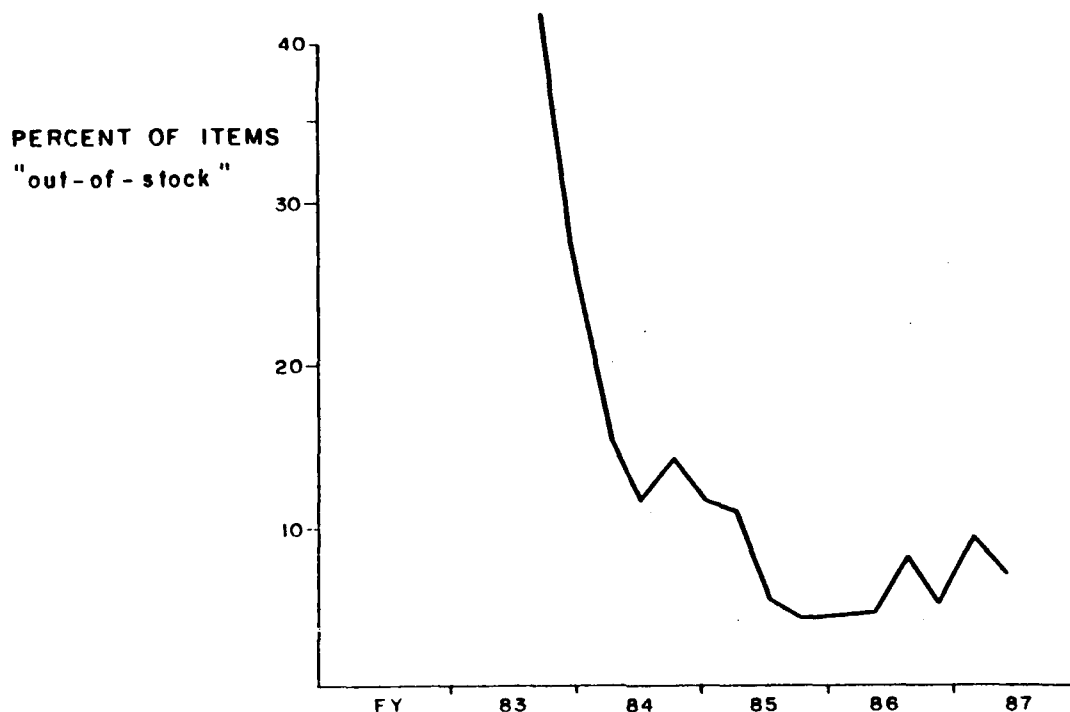


Figure 43. Decline in number of line items stocked at zero balance, FY83 through FY87.

Workload or Processing Levels

Line Items Processed. The variation in numbers of line items processed from FY82 to the present is shown in Figure 39.

Dollar Value of Items Stored. Price levels of demand and supply curves for SMD warehoused items are shown in Figures 44 and 45. The savings achieved by holding inventory below the demand line is the "cost of money" not tied up, less the loss that any negative effects of this conservatism may have on productivity. (Whether these are real savings depends on the mixture of jobs encountered and the cost of not doing these jobs during the time it takes to obtain their materials through BDE Procurement. Very detailed engineering studies are required to determine the cost of not doing a job as scheduled.)

Areas of Development

IJO Supplies. SMD has placed major emphasis on support to in-house IJO performance. However, evaluation of this area is limited because reliable performance indicators have not been acquired over the long term. Nevertheless, the streamlining of procurement and supply procedures has had some measurable successes:

1. Special stocks--one action taken has been the warehousing of expected IJO items; Figure 46 shows the monthly numbers of in-house IJOs satisfied by stocked items in FY85 and FY86. Processing IJOs using supply boosts productivity, even allowing the IJOs to be backlogged for efficient scheduling and best use of available resources.

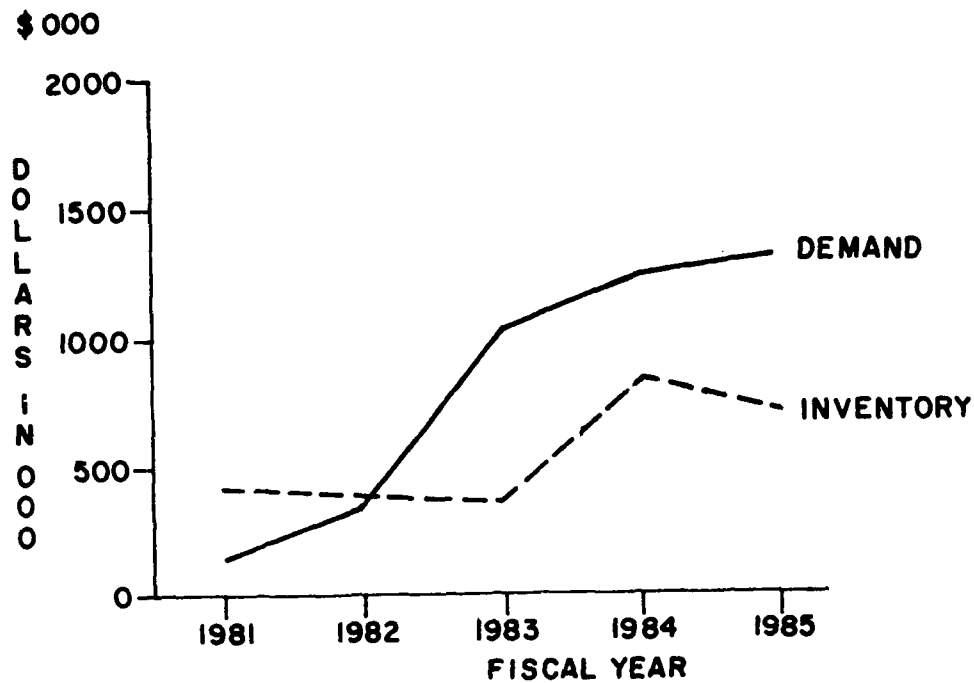


Figure 44. Value of stock stored yearly.

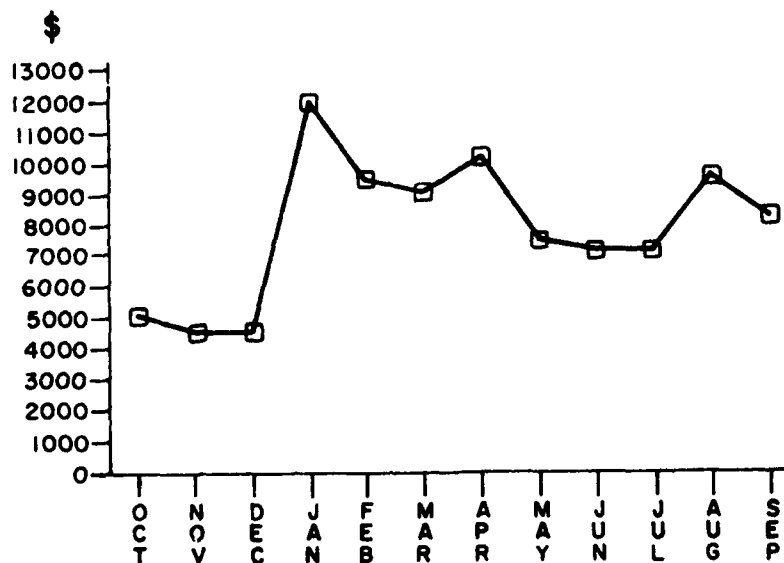


Figure 45. Value of stock which has been issued daily by SMD (FY84).

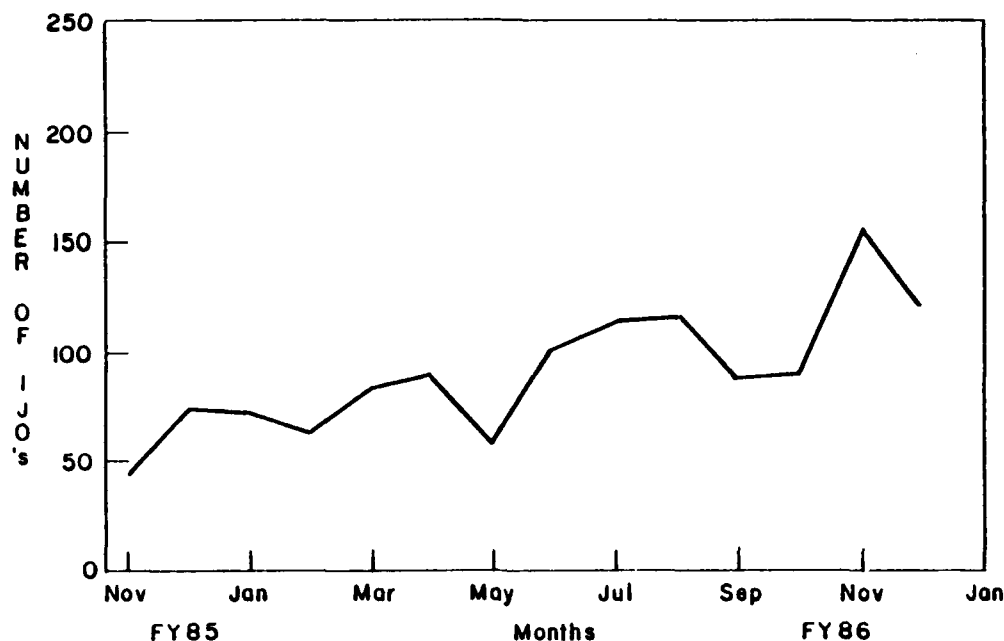


Figure 46. Increase in the number of IJOs supportable by in-stock items.

2. Response time improvement--IJO delays for receipt of necessary materials has decreased 44 percent since FY84 to an average of 86 days in FY86 and FY87. Average IJO delay days for MDW and AHS installations are plotted over this period in Figure 47. Since a reduction in this new norm is desirable, some further study is indicated.

The basic SMD objective to provide an effective, fully responsive supply service has not changed. What has changed is the emphasis from development of a system/organization to that of an integrated, online, operational service. The startup environment was controlled by the initial IPG plan, which emphasized warehouse management and inventory control. This planned scenario of FY80 and FY81 was compared with the configuration and operating realities of FY86 and FY87 and the reasons for their differences were evaluated. The findings are discussed below.

Management Overview

Divisional Structure. As has been seen, the original SD organization (Figure 38) has evolved to the more basic-function branches of SMD (Figure 34). Experience showed that emphasis must be placed on materials handling, disbursement, and customer interface; the current SMD configuration reflects this concern.

Supply Processing. The volume of line items processed in FY87 consisted of some 20,000 requisitions, 16,700 obligations, and 18,800 receipts. There was a relatively flat growth in supply line items from FY84 to FY87, with a dip in volume in FY86. (Most of the FY85 data apparently have been lost by IFS.)

Central Warehouse Operations

Investigations and collected records indicate that there is improved effectiveness in scheduling all RPMA supply warehousing. FE warehouse space, assigned for both USAEA,CA centralized support

and installation direct support, were shown in Table 11 to have dropped by more than 50 percent from FY80 to FY87. This reduction has occurred even though there has been a slight increase in the number of line items processed for FY87 over any previous peaks.

Although Cameron Station Warehouse 9 is 100 percent utilized, a study is now in progress to maximize bin/rack positioning for improved capacity and efficiency. In addition, current space allotments for racked supplies (e.g., piping and lumber) are believed to be insufficient for optimal operating efficiency.

Stock Controls

SMD warehouse stock controls are in compliance with the Army annual inventory and stock check (update) requirements.

Inventories. Figure 48 indicates a delay in the required FY85 annual inventory closeout for 67 of the 83 receiving records (hand receipts) at SMD, plus 6-month updates. This figure is interesting because it reflects a disruption to inventory scheduling caused by moving the USAEA,CA Offices/Branches in FY85. These were Property Record Book problems that were corrected the next year. For FY87, there was a significant workload involving management of more than 2000 FE line items, while 67 FE and 16 Troop Billeting hand receipts were generated (Table 12).

Maintenance of Stock Levels. As noted previously, the potential for SMD listed stock being available when requested has improved; zero-balance items have decreased from as high as 50 percent in FY83 to an average of 6 percent in FY86 and FY87. The current target is 3 percent.

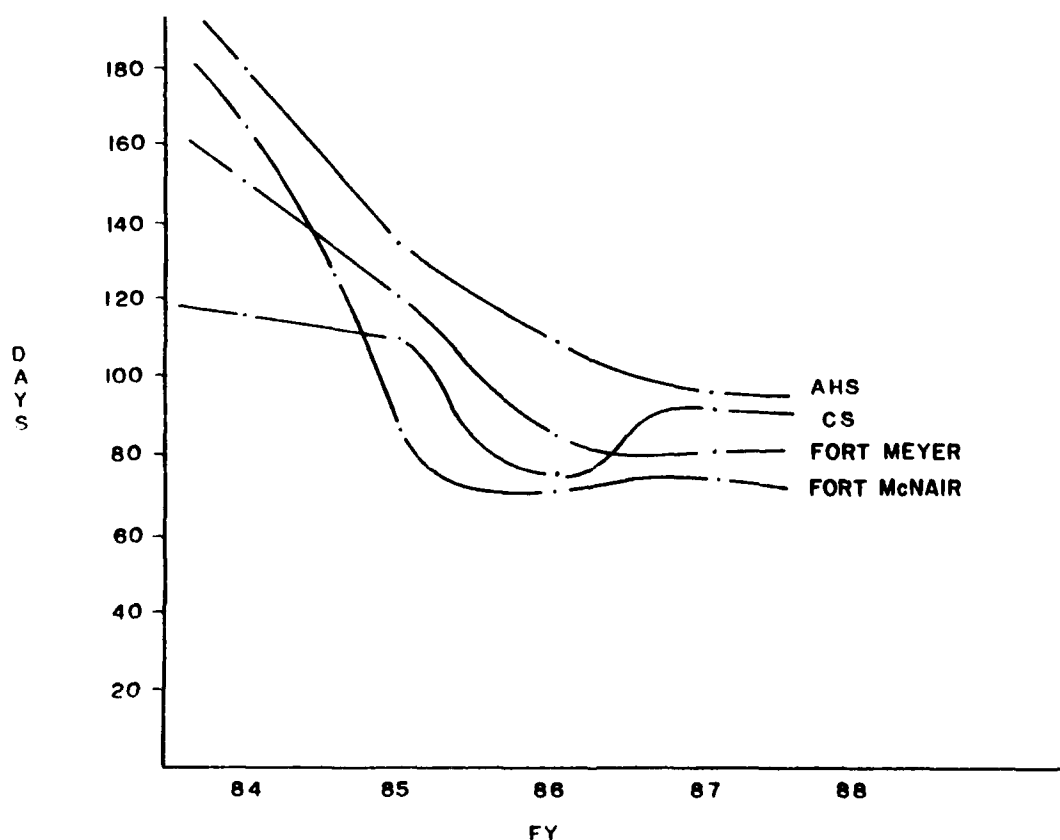


Figure 47. Decrease in average IJO delay days for MDW/AHS.

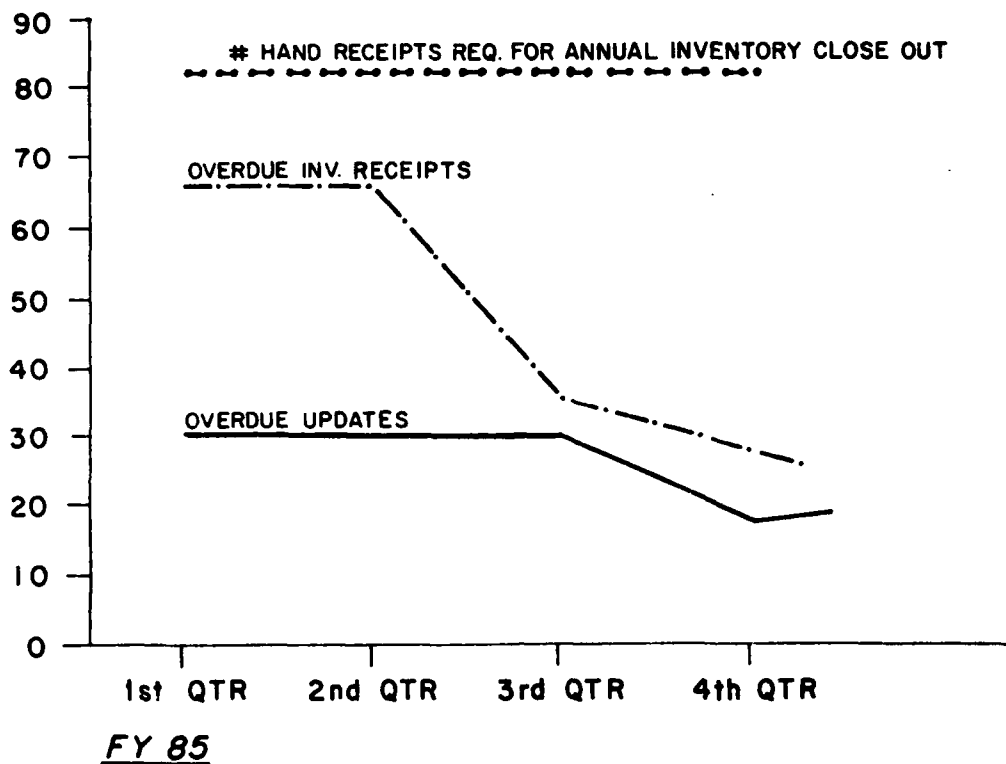


Figure 48. Inventory control and Property Book accounting.

Table 12

FY87 Property Management Statistics

Item	Facility Engineer	Troop Billeting	Family Housing
Number of hand receipts	67	16	253
Number of line items managed	2015	169	510

Work Order Support

During the turmoil of reorganizing in FY83, SMD suffered "bad press" over alleged poor response and lost orders. Since then, cooperation between the RPMM and SMD has upgraded IJO support and the image of SMD. An intensive campaign in FY86 convinced the RPMMs that it is more productive to use the critical priorities of "Immediate" (or 3) and "Immediate, Walk-Through" (3wt) sparingly; SMD now responds more promptly when such priorities are used.

Statistically, materials collection for an IJO takes one-third of a year. Whether or not this time factor is studied formally, IJO supply support is always an area that can be targeted for improvement.

ADP Support

The automated FESS is a key element in SMD procedures. Since FESS monitors and records information on procurement, shop stock, warehouse records/accounting, materials ordering, inventory/PBA records, and O&M (USAEA,CA HQ), it is essential to effective SMD operation.

A supply item cross-referencing system now provides duplicative protection to SMD accounts. Soon, electronic transmission of BOMs will make processing faster, easier to track, and more secure against loss.

7 PROCUREMENT AND CONTRACTING (P&C) MANAGEMENT

Materials procurement and work order contracting services are provided to USAEA,CA by a delegated procurements branch of the BDE Contracts Division (CENAB CT-E). This support has been vital to the successful completion of Phase I test operations and to contract preparations for Phase II.

This chapter describes this service from the USAEA,CA viewpoint; the descriptions provided here are not to be used for guidance in developing P&C procedures. DOD Federal Acquisition Regulations (D-FAR), Army FAR (A-FAR) and its engineering subset (E-FAR), and CENAB Regulations (DR) are used for this purpose.

Scope of Current Operations

Prompt acquisition of materials and services needed for M&R work is essential to effective RPMA support by USAEA,CA. Thus, the P&C capability provided to USAEA,CA is critical to this organization's mission. The P&C management function is responsible for obtaining the supplies and contracting the services (or construction) from sources that are reliable and able to provide quality products in a reasonable time at a competitive price.

Overview

P&C in support of USAEA,CA operations is handled by BDE through the EA,CA Procurement Support Section at Cameron Station (EPCS) for purchases equal to or less than \$25K, and through the Contracts Division for purchases greater than \$25K. When the aggregated cost of a purchase for a supported job is equal to or less than \$25K, the District EPCS field office will normally make a competitive purchase; however, if the price is estimated at less than \$2.5K, a direct Purchase Order will be used. More rarely, CENAB-CT-E may negotiate a procurement contract on a sole-source basis. Current procurement operations are summarized below. Table 13 lists the types of procurements handled.

Procurement of RPMA Supplies. For MDW/AHS installations, the resupply and acquisition of special-order equipment/materials are provided by EPCS. Stock resupplies in the RPMA shops and in the USAEA,CA general warehouse are purchased by EPCS when requested by the SMD of USAEA,CA. Some P&C management ingenuity is necessary for the wide range of orders of non-stocked materials or equipment that must be found to satisfy RPMA requirements.

For Fort Belvoir, EPCS can make purchases for QA support and, more rarely, for any GFE that may be required. Generally, BDE will advertise and solicit bids on major purchases (greater than \$25K), but competition can be waived when conditions necessitate this route.

Construction and Service Contracting. Special (Phase I) or general (Phase II) RPMA services plus all replacement construction are contracted by CENAB-CT-E. The clear advantages of BDE's support are its in-place contracting expertise, availability of in-house legal counsel, and close fiscal control by the Finance and Accounting Branch. It would not have been cost-effective for USAEA,CA to have developed its own contracting services; in contrast, these services were underused at BDE.

Required cost distributions for contract classifications are provided by BDE in a Monthly and Cumulative In-House 1057 Report. Entry classifications in this report are as shown in Table 14. The Cumulative In-House 1057 Report for FY87 is provided as an example in Appendix C. For FY87, this report shows that Supply and Service Contracts numbered 5205 (\$9.08M) at CS, 252 (\$8.56M) at

FTB, and 111 (\$33.17M) at HQ BDE. Total support for USAEA,CA in FY87 was 5568 transactions with a value of \$50,803,412.

Procedures

USAEA,CA maintains and controls the information flow that BDE requires by processing and updating the forms identified in Table 15. The usage and the sequence for completing these forms are described below.

Purchases. When total material and equipment purchases for an IJO are determined to be under \$25K, SMD will forward a BOM (DA 2702) for the IJO to EPCS for further action. At this point, a determination is made as to whether the competitive (>\$2.5K) or noncompetitive route should be taken. Noncompetitive procurement may be by a direct purchase at a reasonable price; competitive procurement will be by a bidding process. (Higher priced sole-source acquisitions can be made when there

Table 13

Types of Procurement

Price Range (\$K)	Purchase of Materials & Equipment	Contracting of RPMA Work
< 2.5	Acquisition by Purchase Order if fairly priced	NA
< 25	Nonstocked Fund Purchases and Resupply Purchases Small Service (IJO) Purchases	IJO Contracts: - Service - New Construction (L-work)
25 to 100	Nonstocked Fund, Supplies	IJO Service & Construction
100 to 500	Nonstocked Fund, Supplies; Special Purchases	Contract Action: - M&R - Minor MCA - Major MCA
500	--	Contract Action: - Major MCA - CA RPMA

Table 14
Classifications Used in the 1057 Report*

FORMAT:

Section A: All/Proc/ Mod Actions	Large Business Small Business Intra-Government	Section B: Set-Asides	Small Business Small Purchases
		Section D: Other Actions	Small & Disadvantaged Businesses Woman-Owned Business

LEGEND:

Large Business:	Chosen in accordance with the uniform policies of the DOD/Army/Engr. Federal Acquisition Regulations (D/A/E-FAR).
Small Business:	As a goal, a certain percentage of contracted work (determined locally) will be awarded to Small Businesses.
Small Business Set Asides:	Competition is limited on certain contracts in accordance with the Small Business Act of 1953 as provided for by each Government agency and reviewed by the Small Business Administration (SBA).
Small and Disadvantaged Businesses:	Each Federal agency with procurement authority is required to have an Office of Small and Disadvantaged Business Utilization "to promote participation of these firms in Government procurement" (Public Law 95-507, 24 October 1978).
Woman-Owned Businesses:	Federal agencies must take affirmative action to support businesses owned by women (Executive Order 12138, 18 May 1978).
Mandatory Source Program:	Certain goods and services produced by the blind or severely handicapped must be purchased by the Federal Government if they are offered at competitive prices.

* Source: *Doing Business With the Federal Government: Principles and Procedures of Government Procurement* (General Services Administration, July 1983).

Table 15
Processing Order for P&C Forms

Source	Form Number	Recipient
Customer Inter-Army Reimbursable Order	DA 2544	FMB/RPMO
RPMM Bill of Materials	DA 2702	SMD/Procurement
RPMM Purchase Request, Commitment, and Design	DA 3953	Contracting Agency
CENAB-CT-E Sole Source Justification	DA 1784	For the record
CENAB-CT-E When Used as a Purchase Order	DD 1155	Vendor
CENAB-CT-E When Used as Request for Quote	DD 1155	Bidders
CENAB-CT-E Formal Contract	Standard Form 33	Contractor and Contracting Officer
CENAB-CT-E Contract Modification	Standard Form 30	Contractor and Contracting Officer
CENAB-CT-E Solicitation, Offer, and Award	Standard Form 1442	Contractor and Contracting Officer

is a valid requirement.) The CENAB-CT-E internal procedures allow the use of a Blanket Purchase Agreement (BPA) as shown in Figure 49. In general, purchases can be characterized as follows:

1. Purchase Order--when the amount is under \$2.5K, a Purchase Order is prepared by EPCS and a direct purchase made. (If purchases will be repetitive, some attempt is made to circulate selection among the available suppliers.)

2. Bid-Process Purchases--bidding requires the preparation and distribution of DD Form 1155 as a Request for Quote, followed by required price/delivery negotiations before selecting the supplier.

3. Sole-Source Purchases--when a sole-source approach is used and competition is required, a DA Form 1784 (Small Purchase Pricing Memorandum) can be used to provide a waiver justification, followed by negotiation and preparation of the DD Form 1155 as a purchase order.

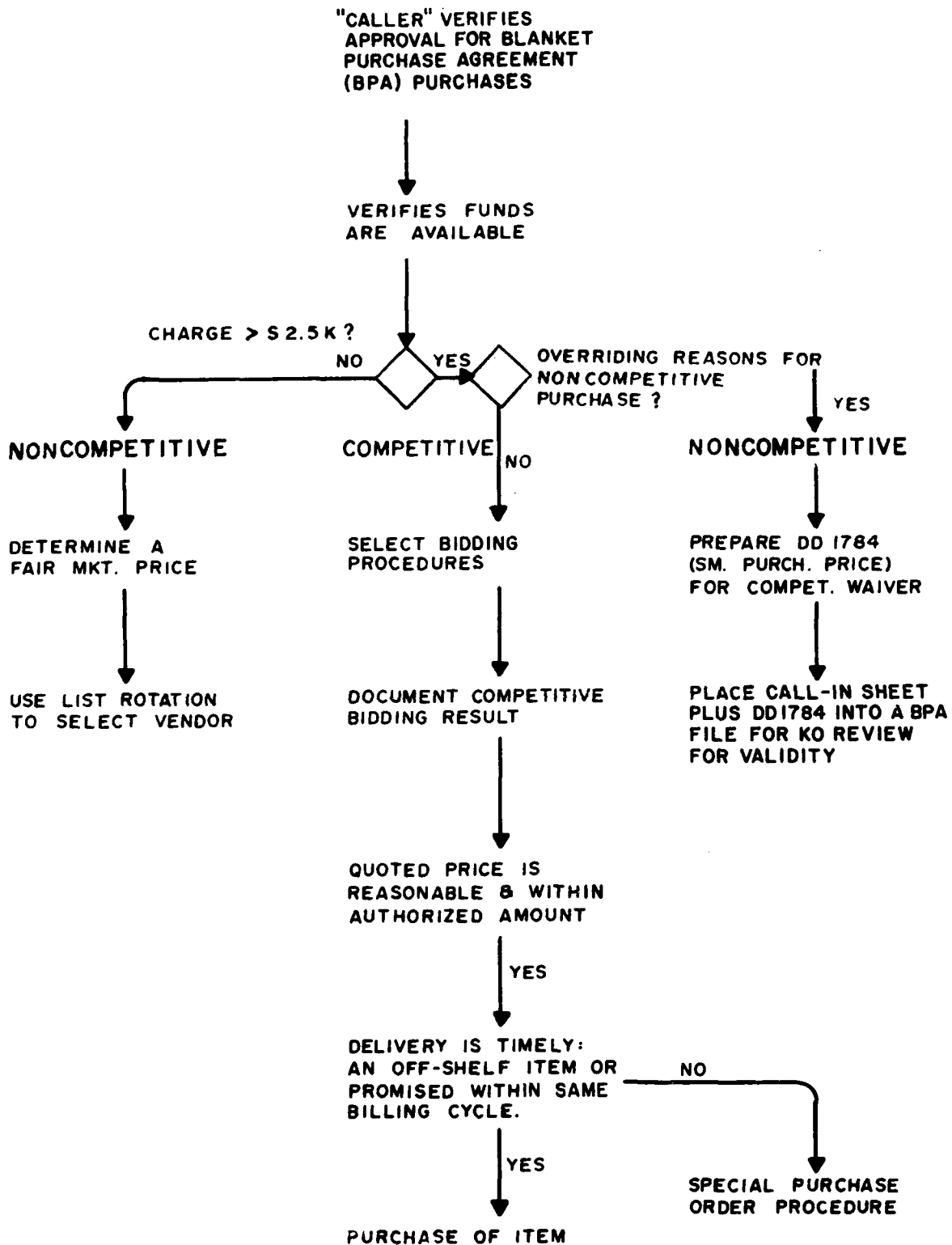


Figure 49. Functional relationships in Blanket Purchase Agreement (BPA) purchases by CENAB-CT-E, FY87.

Contracting. or construction or service contracting, a Purchase Request and Commitment form (DA 3953) is generated, and either the DD Form 1155 is allowed to stand as a contractual document (under \$2K) or an Engineer Form 1442 is used with a bidder abstract added for contracts up to \$25K. When contracting an IJO (>\$25K), competitive bidding from a qualified contractors' list is desirable.

Service or construction contracts require a DA 3953 to be prepared by the RPMO and sent via the installation and FMB to EPCS; this form becomes the basis for generating the contract. Figure 50 shows the service contract procedure; an itemized description of this flow is provided in Internal Procurement Management Instructions (IPMI) 81-3 as shown in Appendix D. Figure 51 shows the sequence for processing RPMA support forms through CSS as part of contracting a single IJO.

Transitions From Original P&C Plan

Overview

Because MDW had a centralized procurement and supply system in place and working at the time of the original planning for USAEA,CA, the IPG had 12 P&C implementation options that could be considered. Their decision was to recommend that the supporting district could provide total support for procurement actions less than \$10K through a modestly sized annex located with the SMD of USAEA,CA; the remaining support for procurement actions of more than \$10K could be run by the District. The current FY87 supporting District configuration continues with this structure for P&C support to USAEA,CA; the criterion is now \$25K and procedures have been simplified, but the structure is the same.

USAEA,CA P&C was implemented in accordance with an MOU between DCSACQ, MDW, and CENAB-CT-E. The MOU outlined procurement responsibility flow from MDW to the District during the transition period.

Operations Planning vs. Implementation

IPG Plan.¹⁸ Contracting procedures, as originally implemented in FY81, are shown in Figure 52 for amounts equal to or less than \$10K and in Figure 53 for contracts greater than \$10K. These procedures can be followed by referring to the corresponding numbers for each activity provided in Appendix D. For comparison with the current IJO process, see Figure 51.

Phase I Operations. A major influence on P&C interface improvement was the addition of effective automated systems to FMB and SD/SMD of USAEA,CA. Information flow was greatly facilitated by (1) the common data base in WONDERS, (2) the availability of status printouts for tracking projects and their materials, and (3) automation of required reports.

Phase II Operations. Contracting operations at FTB will be under the P&C Section of CENAB-CT-E located at FTB. Procedures will be as shown previously in Figure 50.

Efficiencies of the P&C Service

The quality of procurement service by the BDE to USAEA,CA was evaluated by selected measurements applied to CS/SMD service records and the findings are provided in Chapter 5. Another measure of CS Procurement's effectiveness is in supporting IJO requirements; here, the *delay statistics*

¹⁸ R. Blackmon.

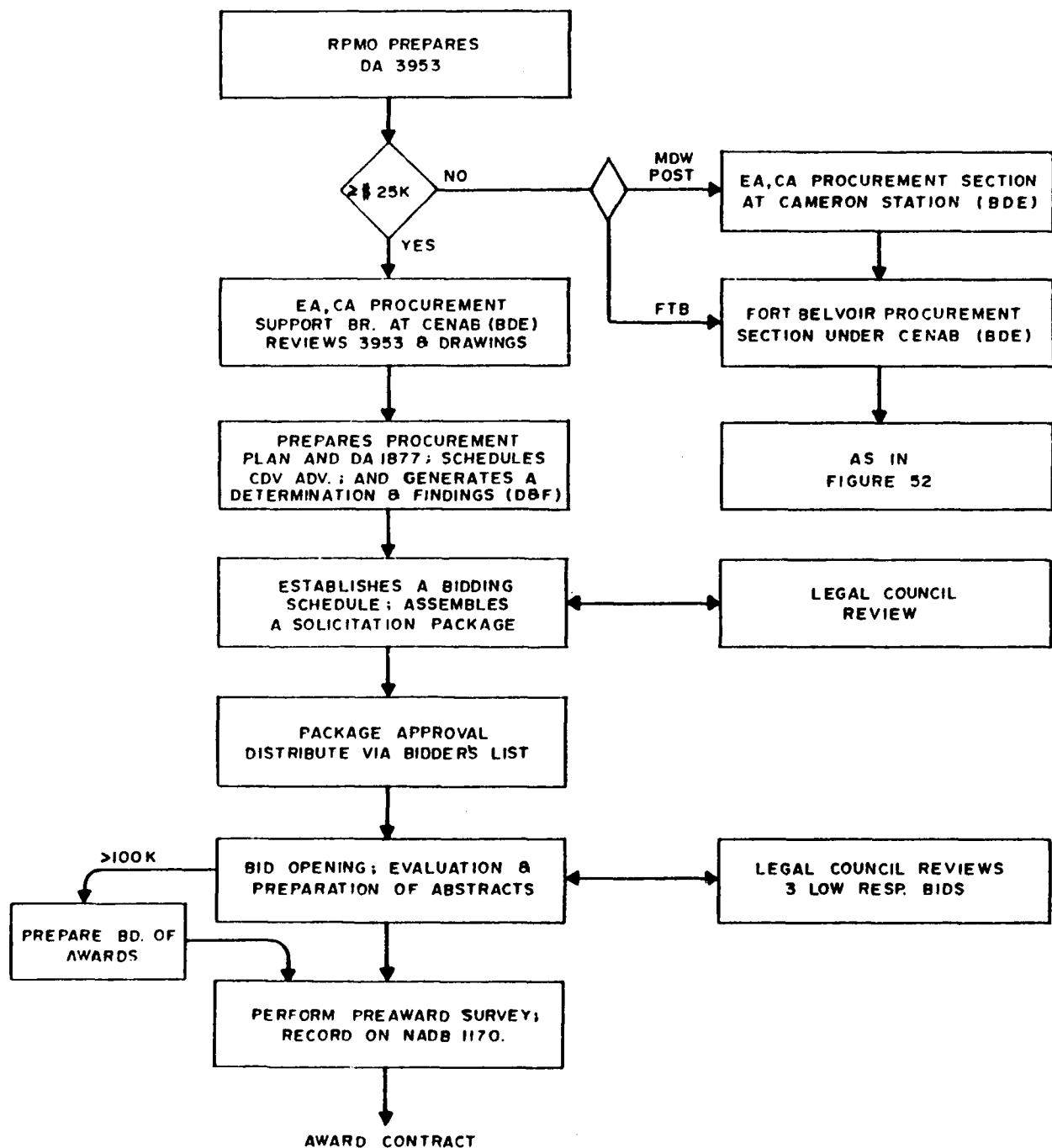


Figure 50. Service contract preparation under CENAB-CT-E, FY87.

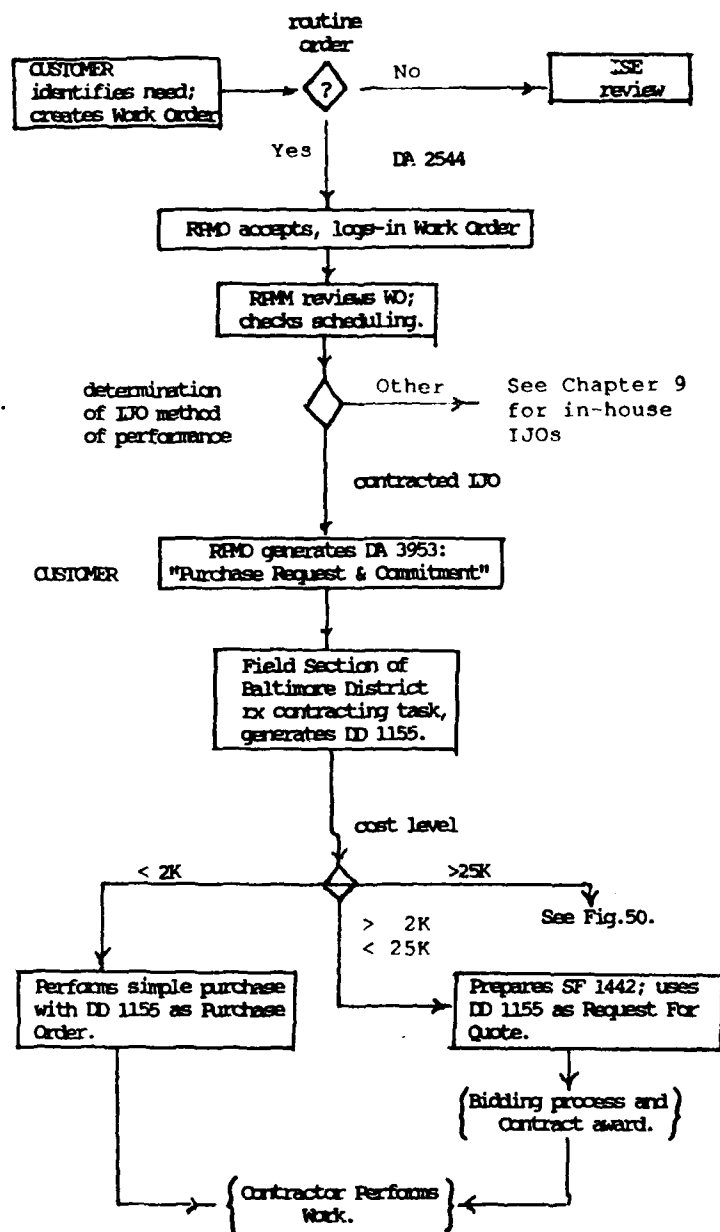


Figure 51. Process for contracting an IJO.

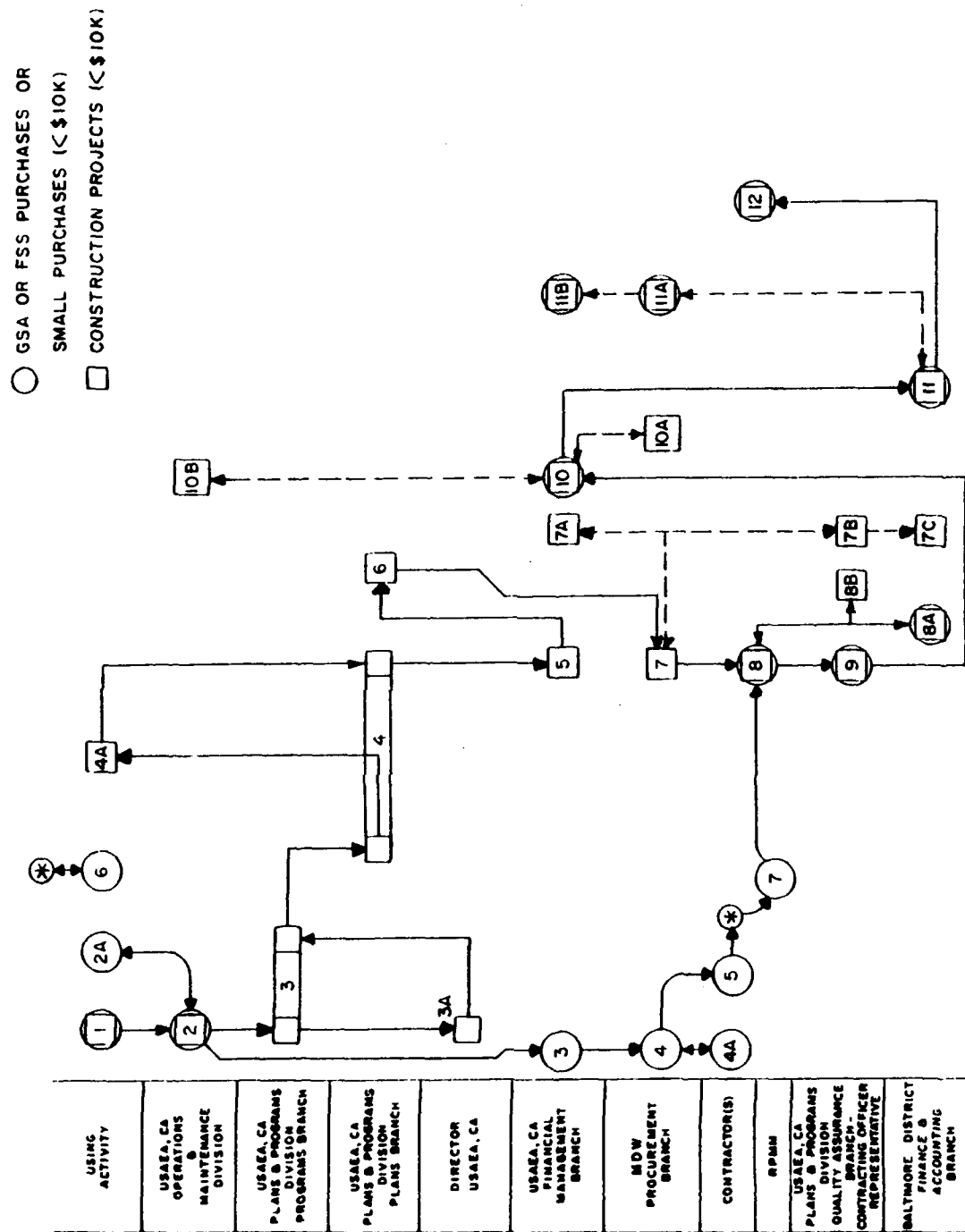


Figure 52. Process for purchase or construction contracts when less than \$10K, FY81.

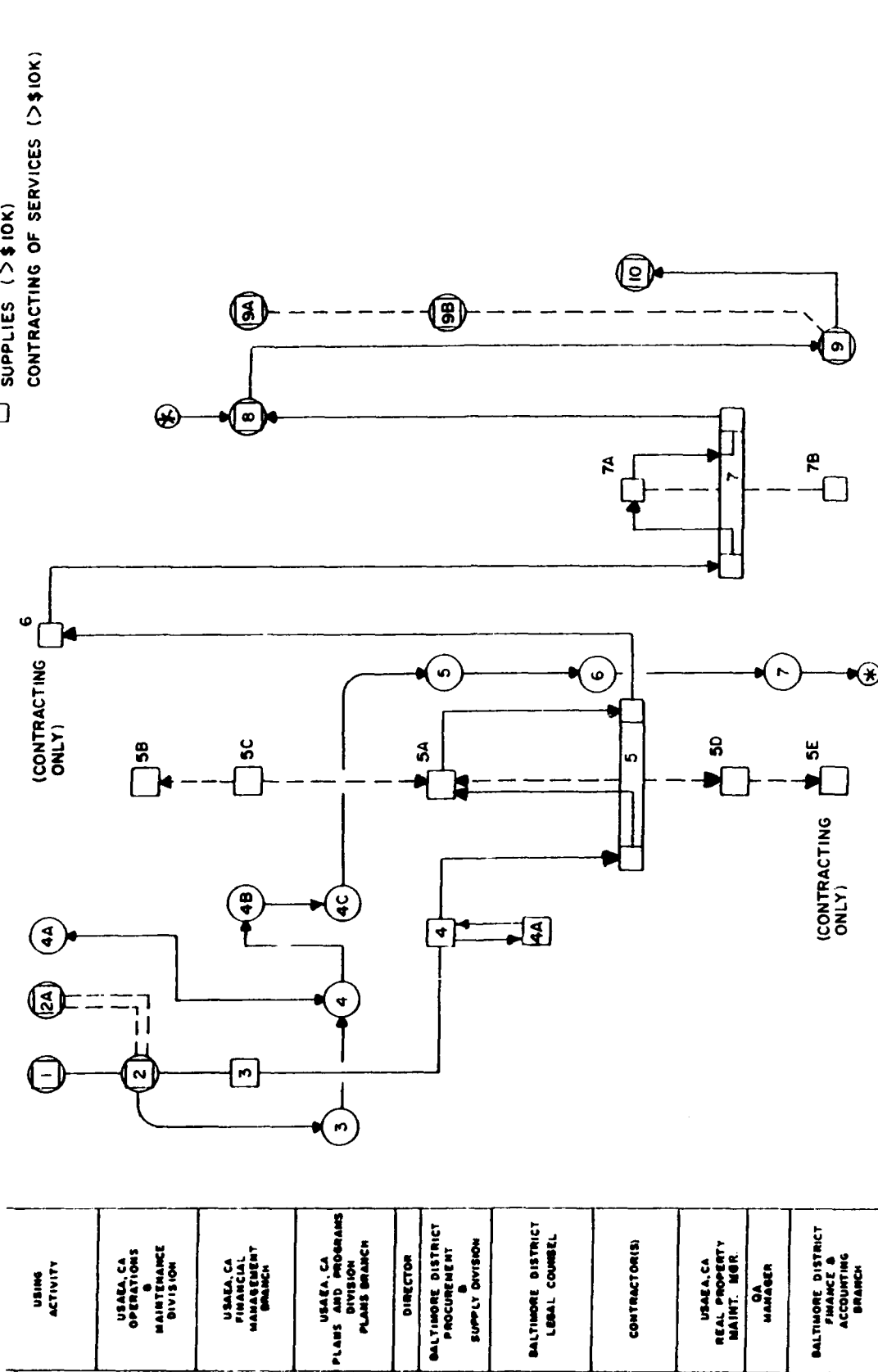


Figure 53. Process for purchase or construction contracts when greater than \$10K, FY81.

for IJOs were considered (i.e., the average delay days for all IJOs regardless of priority or need status). This evaluation is provided under **RPMA Management** in Chapter 9.

Status Evaluation

EPCS Procurement has been understaffed for routine operations, and probably would lack the mechanisms for immediate acquisition of critically needed materials while sustaining a high level of routine requests. Inquiries to EPCS concerning the status of ordered materials had reached such volume in FY87 that they interfered with performance of the procurement activities; as a result, a formalized inquiry process was installed and enforced.

Overall, the BDE P&C service has been excellent, with a strong HQ reserve to assure secure, long-lasting support. No outstanding procurement problems are evident and both USAEA,CA and BDE management confirm the value of continuing the relationship.

8 AUTOMATIC DATA PROCESSING

ADP has been central to the development of USAEA,CA since FY82. This development was led by the ASO until FY87, when the ASO functions were upgraded and incorporated into the new IMO.

The growth of automated systems in USAEA,CA has been by in-house design and applications development of software packages for a "Super-Mini" WANG VS-100 system. From USAEA,CA activation through Phase I, important programs and modules have been developed and improved to keep up with the increasing USAEA,CA information processing requirements; Phase II appears to be bringing interface and linkage problems that will require additional ADP solutions. This chapter discusses the ASO/IMO approach to ADP program and equipment development in support of USAEA,CA, the performance of these systems, and their contribution to centralized RPMA goals. Table 16 lists the major events in ADP development since the FY81 consolidation.

Scope of Current Operations

The programs developed by USAEA,CA have become modules of an integrated system now called COSMIC. COSMIC uses both in-house designed and acquired programs and is a single unified system, promoting standardized definitions and requiring compatible data for subsystem interfaces.

IMO Operations

IMO supports the Information Mission Area (IMA) and its related responsibilities for USAEA,CA (AR 25-1¹⁹). The IMA encompasses communications, all automation, audiovisual information, records management, and publications and printing. IMO reports IMA activities to monitoring agencies (the U.S. Army Information Systems Command and USACE). The IMO also provides personnel administration, supervises USAEA,CA training, and administers payroll liaison/time and attendance support to all USAEA,CA elements.

IMO Structure. The IMO contains three branches that perform as follows:

1. Integration and Implementation Branch (IIB)--the IIB directs and supervises integration of software and data base administration with USAEA,CA automated systems and manages the implementation of information systems.
2. Information Systems Support Branch (ISSB)--the ISSB directs, maintains, trains, and supervises all functions concerned with user support in information management. ISSB maintains libraries and controls systems security (AR 380-380²⁰), and closely monitors requirements for present and future software/hardware needs.
3. Administrative Support Branch (ASB)--the ASB directs and supervises selected IMA and personnel support functions in the administrative area, as well as personnel activities in general.

IMO Applications. Figure 54 is a current functional flowchart for processing WO and SO documentation.

¹⁹ AR 25-1, *The Army Information Resources Management Program* (HQDA, 18 November 1988).

²⁰ AR 380-380, *Automation Security* (HQDA, 8 March 1985).

Table 16

Major Events in the Development of ADP Systems for USAEA,CA

FY81:	<p>EA,CA activation.</p> <p>ADP development supported by RMD.</p> <p>FESS provided to Supply Division.</p> <p>Automation Section in RMD developed the following:</p> <ul style="list-style-type: none">• Personnel/Position Management (ADMIN)• Service Order Requests (SOLVES)• Major Project Management (PROJECTS).
FY82:	<p>Automated Systems Office (ASO) created from the Automation Section of RMD.</p> <p>ASO developed some programs fundamental to EA,CA operations including:</p> <ul style="list-style-type: none">• Individual Job Order (IJO) Work-Request and Work-Order (WR/WO) Management (WONDERS),• Labor/Equipment Cost Management (LEADGOLD). <p>ASO assisted EA,CA divisions in adapting:</p> <ul style="list-style-type: none">• Facilities Engineering Supply System (FESS)• FE Job Estimating System (FEJE).
FY83:	<p>ASO study for a total system upgrade of hardware/software to meet EA,CA operational needs.</p>
FY84:	<p>ASO developed:</p> <ul style="list-style-type: none">• Assets Management (TABLES)• Electronic Funds Tracking (FUTURE). <p>SOLVES was incorporated into WONDERS.</p>
FY85:	<p>WONDERS accepted for direct reporting/listing of Work Requests and Service Orders (IFS reports requirement dropped).</p> <p>An especially useful data file is added:</p> <ul style="list-style-type: none">• Multiple Expense and Recording Transaction File (MERT). <p>ASO developed new programs as follows:</p> <ul style="list-style-type: none">• Customer Billing System (BILL)• Contract Cost Management (CONTRACT). <p>Initial COSMIC System completed.</p>
FY86:	<p>ASO coordinated ADP interface for Phase II FTB consolidation.</p> <p>ASO added two new modules:</p> <ul style="list-style-type: none">• Index of Installations/Facilities (FACILITIES)• Utilities Information System (UTILITIES). <p>Phase II FTB data processing plans finalized.</p>
FY87:	<p>The Information Management Office (IMO) was established under an "Information Mission Area" reorganization by USAEA,CA; IMO encompassed the ASO and the Admin. Office functions.</p> <p>Phase II increase in data processing volume handled.</p>

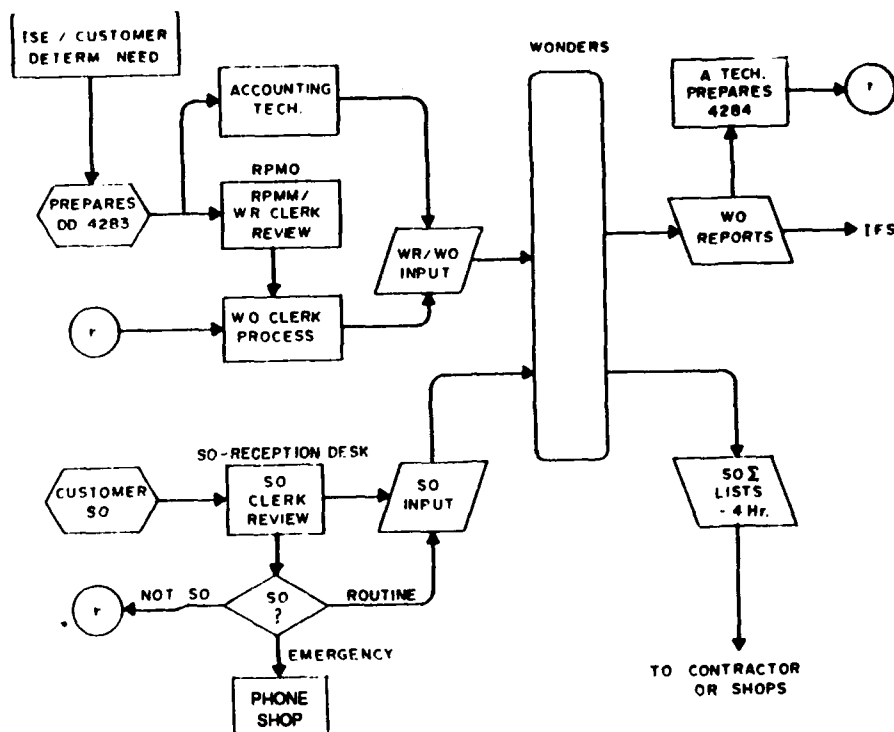


Figure 54. FY87 WO/SO data flow using WONDERS in IMO for report/list outputs.

IMO Software Operation/Performance

COSMIC contains both the basic automated functions for RPMA support and the special developments unique to USAEA,CA. COSMIC handles contracting, personnel, and funds management functions. The COSMIC modules are grouped and linked according to the USAEA,CA functions served, as Figure 55 illustrates. This figure shows that USAEA,CA information processing is automated for four functional groups:

- Expenses--outlays accumulated/charged to each responsible customer
- Accounting--customer billing, etc.
- Resources--post facility listings and equipment records
- Production--RPMA performance.

Figure 55 shows that COSMIC submits accounting data to COEMIS, with linkages to FESS and each of the consolidated installations. The IMO data system of USAEA,CA also links financial/operating information from COSMIC through COEMIS, either to the BDE's Financial Management Division or to the ISE and customer.

Note that IFS and COEMIS are standard Army automated systems whose primary functions in relation to USAEA,CA are to provide RPMA management and employee records support. In contrast, COSMIC was developed specifically for USAEA,CA operations.

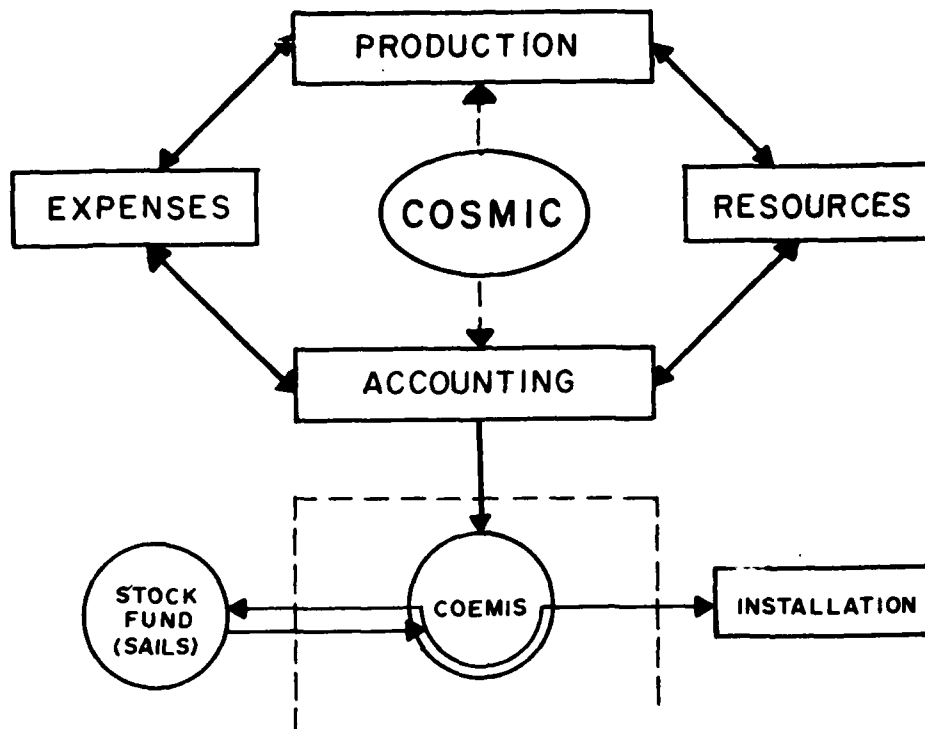


Figure 55. Financial information flow between COSMIC and COEMIS.

Growth of ADP Support to USAEA,CA

Although the goal of providing effective ADP support to USAEA,CA customers has remained unchanged, development of ADP systems within the organization has accommodated some variation in the developmental objectives--including the IFS interface criteria and the combining of ADP systems to be used in stand-alone mode.

Implementation planning was concerned with the data linkages to IFS. Initial Phase I consolidation support involved the development of a parallel in-house ADP system and IFS capability; further into Phase I, the shift was toward ADP support that was fully developed in-house. Then, with the Phase II consolidation of FTB, interfacing the CA contractor's IFS with USAEA,CA ADP systems gained importance.

The ADP development included some notable software progress, especially in the areas of personnel records, cost data records, and RPMO work status information (Table 16).

ADP Developments in Phase I

At the time of USAEA,CA activation, ADP success was thought to be dependent on having an IFS operational at all installations. This provision required having valid and current IFS Job Master Files, Installation Management and Planning Files, and similar information. The accuracy of the billing and overhead cost data would depend directly on having current, accurate data in the IFS.

Special function programs proposed for USAEA,CA in FY81 included:

1. Service Order Entry and Validation (SOLVES)
2. Labor and Equipment (L&E) Card Entry and Validation (LEADGOLD)
3. Job Entry and Status (WONDERS)
4. Contract and Contract Cost Management (CONTRACT)
5. Personnel Management (ADMIN)
6. Utilities Billing Calculations and Cost Distributions (UTILITIES).

The original FY81 information flow plan (Figure 56) placed the newly developed WONDERS online to process WOs and generate IFS input data; however, required interactions between these systems became complex and made the auditing difficult. Batch processing also caused delays.

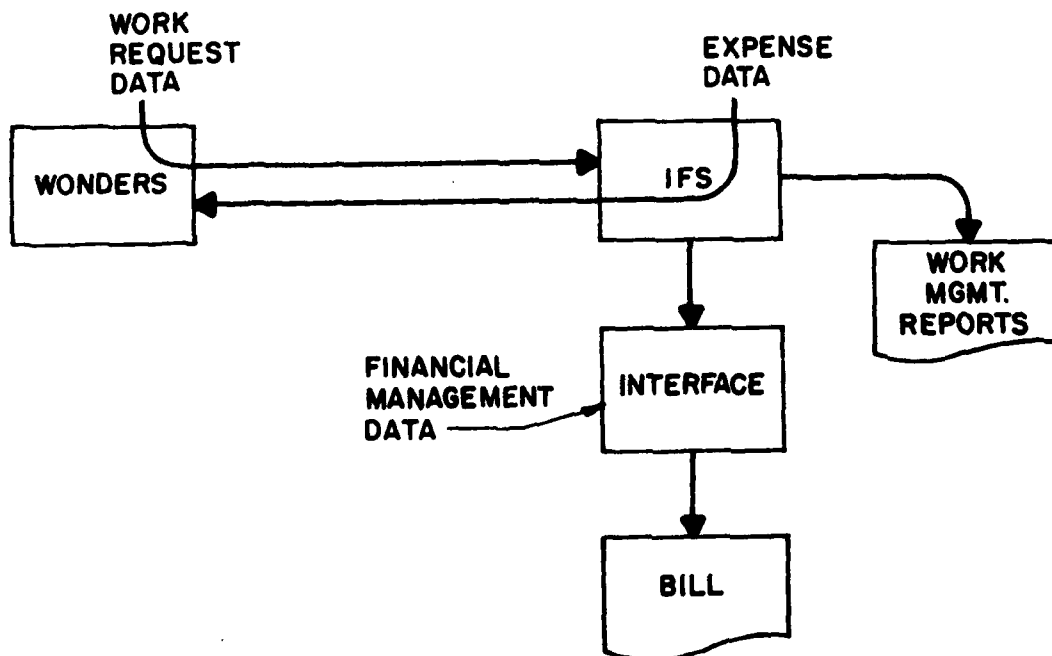


Figure 56. Phase I USAEA,CA information flow, FY81.

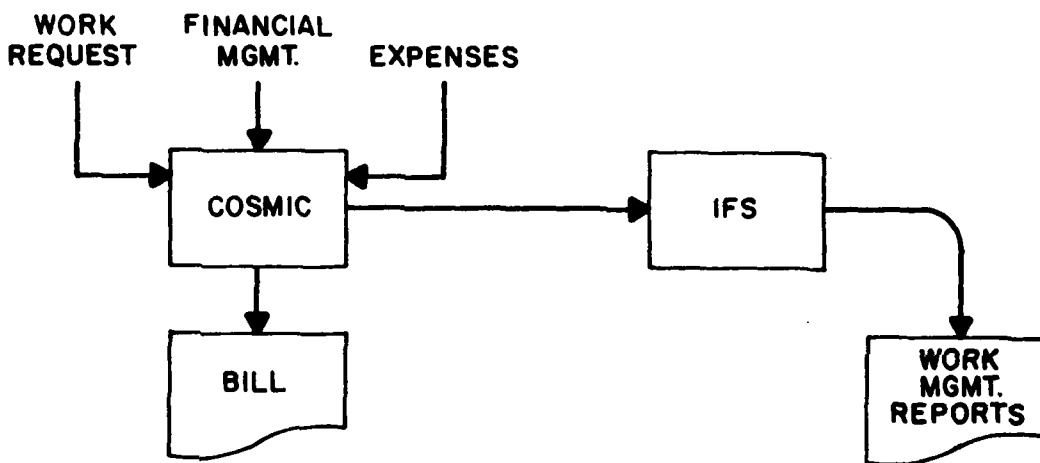
These problems rendered planning for ADP contributions to the Phase I consolidation test uncertain. Improvements recommended for ADP support included:

1. Require *same day* entry of L&E card data.
2. Permit *direct entry* of source documents to reduce data inaccuracies.
3. Provide *real-time status* of RPMA cost data.
4. Acquire *enough terminal capacity* to provide access to all operations and management personnel that require it.

Figure 57 shows the upgraded processing system using COSMIC in FY85.

In FY82, the need for correctly formatted, accurate, and identifiable data flow between all accounting systems prompted action to improve the IFS data exchange system. (Since January 1980, the Phase I consolidated installations that were online with IFS had been operating at an unacceptable error rate.) In response to this need, the IFS/INTERFACE/COEMIS Automated System (IICAS) was developed. This data input mechanism was necessary if an effective operations test of the Phase I consolidation RPMA was to be conducted.

IICAS was designed to extract detailed job cost and civilian labor data periodically from IFS and reorder the data for reports output. Based on the recorded labor hours of the craftsman performing RPMA for a customer, an overhead cost was applied to the civilian labor hours used; these hourly charges were subsequently debited to the customer order number. Output from this system furnished data to COEMIS, STANFINS, and IFS.



SOLUTIONS

- SIMPLIFIES TRACKING OF FUNDS
- CONSOLIDATES WORK AND FINANCIAL MGMT. TO SIMPLIFY AUDITING
- IMPLEMENTS STATE-OF-THE-ART HARDWARE AND SOFTWARE
- PROVIDES INSTANTANEOUS AND CONCURRENT ACCESS TO RPMA PERSONNEL

Figure 57. Phase I USAEA,CA information flow, FY85.

The introduction of new hardware and associated software developments increased capabilities and made possible the process shown in Figure 57. This equipment became active in FY85 and improved operations in that it:

1. Simplified the tracking of funds.
2. Allowed a correlation of work and financial management entries to facilitate status and audit checking.
3. Provided basic RPMA personnel records.

ADP Developments for Phase II

Pretest studies for Phase II indicated that the evaluation should be based on the "comparison methodology" used in Phase I. Thus, an FTB baseline will have the measurement points (indicators) that can be compared with FTB operations under consolidation. The baseline indicators developed for FTB include cost, manpower, and responsiveness data which are developed in the FTB baseline studies by Huntsville Division and E. L. Hamm and Associates.

The data collection and data processing (spreadsheet) methodology of Hamm and Associates uses a personal computer (PC) to develop FTB Baseline Data Indicator Tables; these data are updated automatically upon entry of any new collection data.

Corresponding plans for measuring Phase II consolidation are being developed, such as the reports to be generated by the COSMIC/IFS which include the Civilian Manpower Utilization Summary Report, the FY (or Year-End) Detail Obligation Report, and selected surveys.

For an evaluation of the ADP systems used, see **Reliability and Effectiveness of ADP Systems** below. Also, see Chapter 9 for an evaluation of the FTB data collected.

ADP Configuration Alternatives

The custom-designed ADP systems developed reflect the specific needs of USAEA,CA; these systems are acceptable alternatives to IFS until IFS-M is released in FY89. The FY81 Phase I, FY85 Phase I, and FY87 Phase II ADP configurations are alternative systems, not stepwise developments. They were used because of the "temporary limitations" of IFS. The IFS, IICAS, and COEMIS systems are described in Appendix B.

The ADP objective in FY81 was to interface with and input proper data to IFS. The basic IFS modules are Assets Accounting (AA), FEMS, and RPMA.

AA stores and maintains assets information (inventory, utilization, and condition), produces the required assets reports, and provides the basic data base for FEMS and RPMA.

FEMS supported the installation FE with daily operational management data. It shows the status of work documents (i.e., SO, SOO, and IJO) from initiation until completion. FEMS passes actual cost information to the AA and RPMA modules.

The RPMA module covered four FE functional areas: operation of utilities, maintenance of real property, minor construction, and other engineering support. These areas are respectively referred to as the J, K, L, and M accounts of the Base Operations, and Operation and Maintenance Appropriation. The RPMA module stores facility/component deficiency data and provides reports for use in the management process.

IICAS Contribution to Phase I. Figure 58 shows the original financial document flow of output data from IICAS delivered as input data to COEMIS, IFS, and STANFINS in FY81. Figure 59 shows the original transactions and the billing flow for USAEA,CA in FY81.

IFS Problems. The accuracy of billing and overhead cost data depended directly on having accurate data in IFS. In 1983, a 3-month ADP test was conducted to determine the efficiency of support that IICAS provided. It was concluded that the IICAS only *marginally* supported the RPMA NCR test routinely because:²¹

1. Monthly billing was often late, especially at the end and the beginning of the fiscal year.
2. USAEA,CA IICAS users found that the system was difficult to use, often contained obsolete data, and produced reports that either were incorrect or incomplete. Some IICAS users (e.g., as the RPMM) had to maintain a parallel manual record system to verify the information generated by IICAS.
3. IICAS users were spending considerable time correcting and reentering data in all IICAS transaction areas.

Recommended changes in the automated system were:

- Automate DA 2544 recording in USAEA,CA
- Automate transmission of DA 2544 recording to BDE

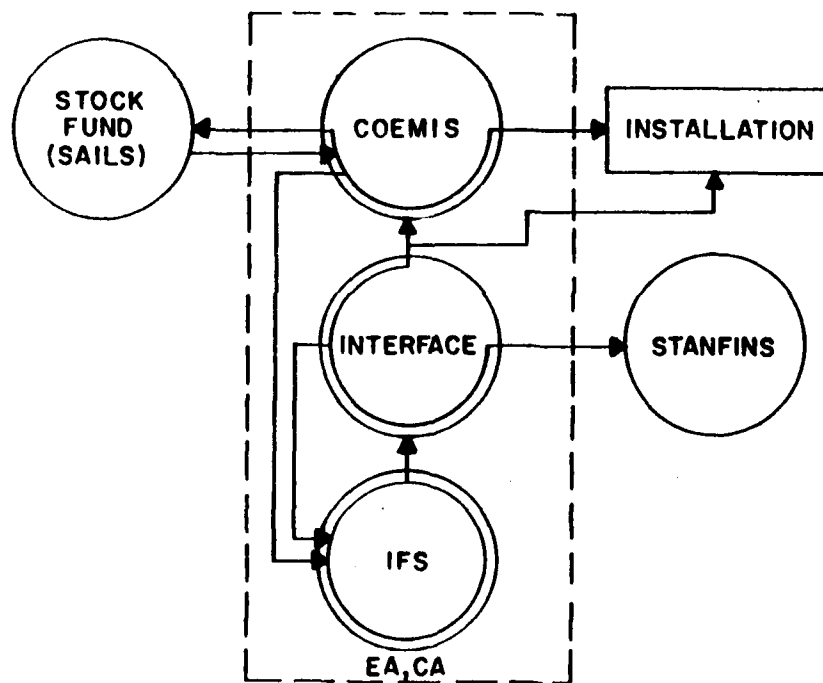


Figure 58. FY81 financial reports flow.

²¹ G. W. Siegel and W. A. Miller, *Subtest Report: IFS/Interface/COEMIS Automated System* (undated).

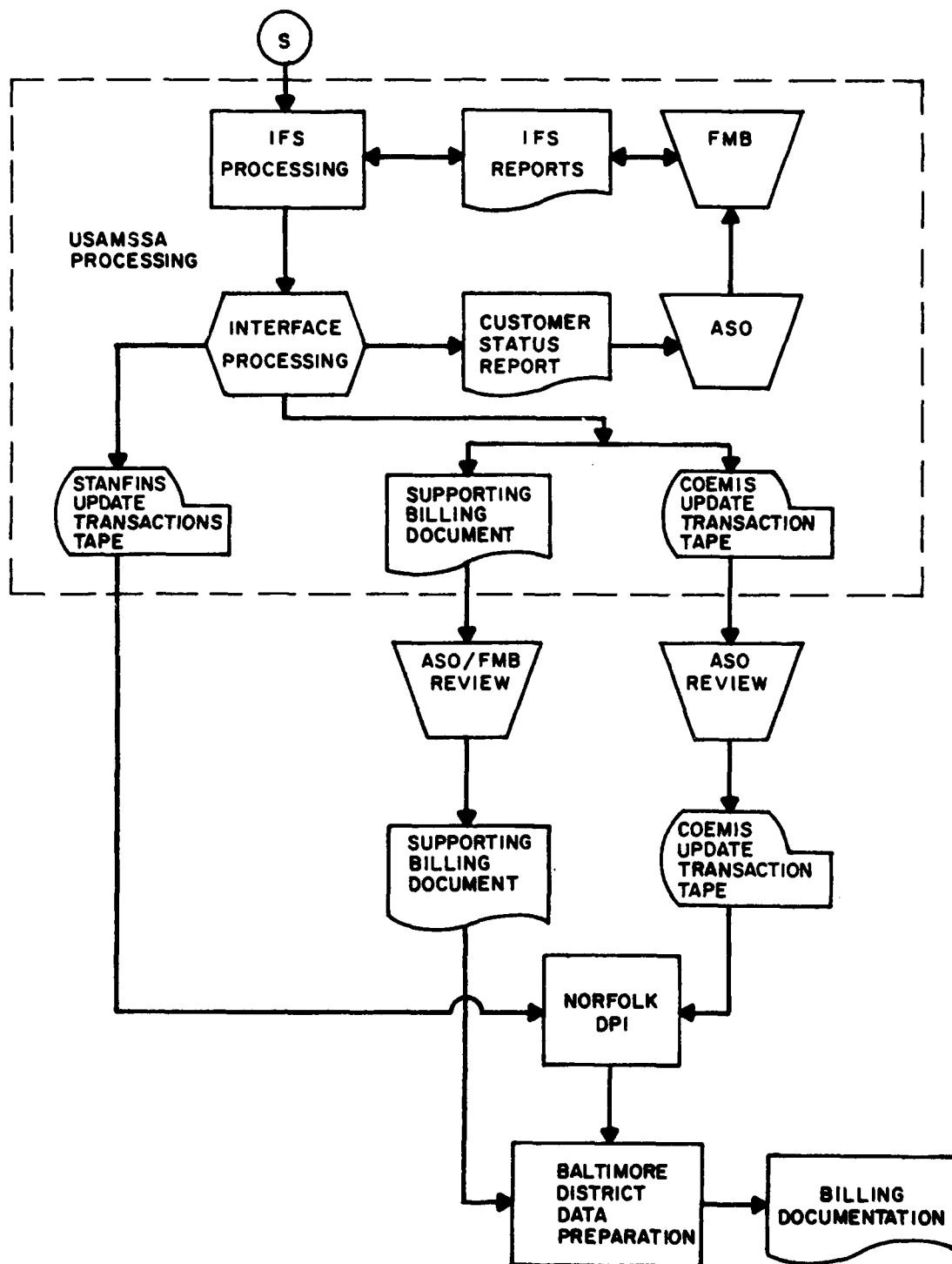


Figure 59. IICAS automated processing flowchart.

- Reduce paper output by combining some reports and eliminating unnecessary ones
- Train personnel for data input and correction, as well as data extraction, for generating special reports and review/correction of reports.

Operations Planning and Implementation

Operational effectiveness required the financial management reporting function to be automated, preferably within existing Army ADP standards. System modules have been added or improved, and equipment has been updated to meet the increasing needs of USAEA,CA. Besides the integration of new modules into COSMIC, the following are the major changes in the total ADP capability:

1. IFS/COEMIS: IICAS was developed to allow USAEA,CA to bill correct data to customers through COEMIS (Figure 58). Based on recorded labor hours of the craftsman performing RPMA for a customer, overhead cost per hour is applied to the civilian labor hours used and charged to the customer order number. Output from this system furnishes data to COEMIS and STANFINS.

2. COSMIC Program: the changes made to COSMIC were first based on the needs of an effective financial management branch for centralized RPMA. The implementation plan had attempted to avoid some problems through initial ADP support, but these programs still could not provide the level of financial management data needed.²² Hence, the COSMIC information flow (Figure 59) was modified so that:

- Tracking of funds was simplified
- Work and financial management were consolidated to simplify auditing
- State-of-the-art hardware and software were implemented
- Instantaneous, concurrent access to RPMA personnel was provided.

3. Hardware: the computer network was expanded and the TDA amount of computer equipment/personnel increased. At EA,CA headquarters, for example, the expanded network system of Figure 60 was brought online with a WANG VS-100 (Super-mini). Table 17 shows the buildup of USAEA,CA computer equipment and personnel from FY80 to FY85.

COSMIC Development

Functional Relationships

The Accounting/Production/Expenses/Resources modules of COSMIC are depicted in Figure 61 to show the interrelationships of these categories and their associated computer programs. Figure 62 identifies the USAEA,CA functional services supported by the program and modules identified in Table 17.

²² Letter to: HQDA (DAEN-DSE); From: COL James L. Trayers, Jr.; Subject: Upgrade of USAEA,CA ADP Equipment (23 February 1982).

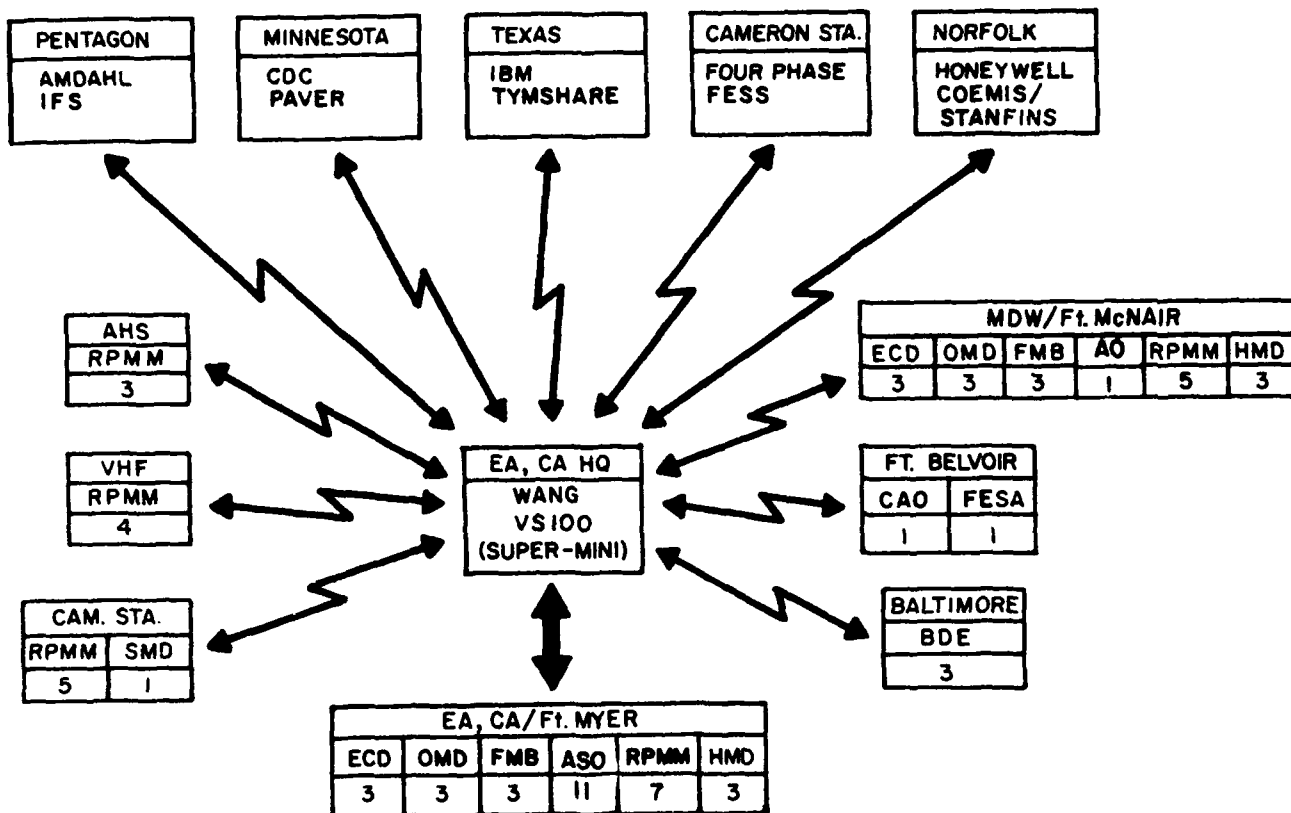


Figure 60. ASO computer network for the Phase I consolidation.

Table 17

USAEA,CA Computer Equipment/Personnel

Item	Start of Fiscal Year:		
	FY81	FY86	FY88
Equipment:			
CRTs	10	61	87
Printers	2	16	16
CPU	0.5 Mb	6 Mb	6 Mb
Disk	90 Mb	1772 Mb	1772 Mb
Modems	3	46	54
PCs	-	0	13

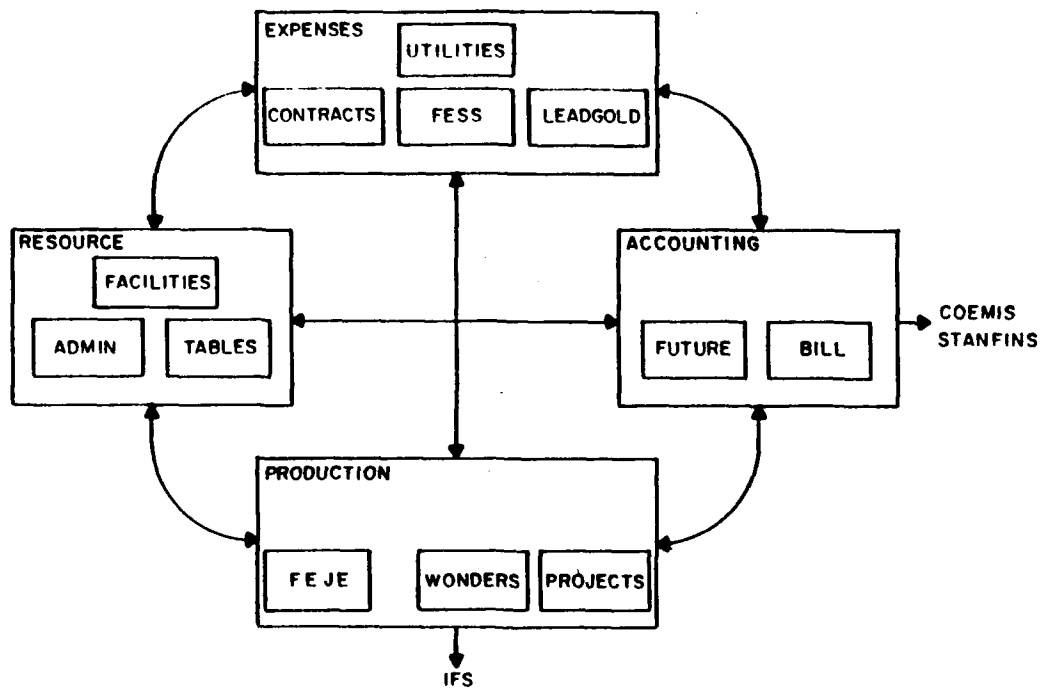


Figure 61. COSMIC distributed data input.

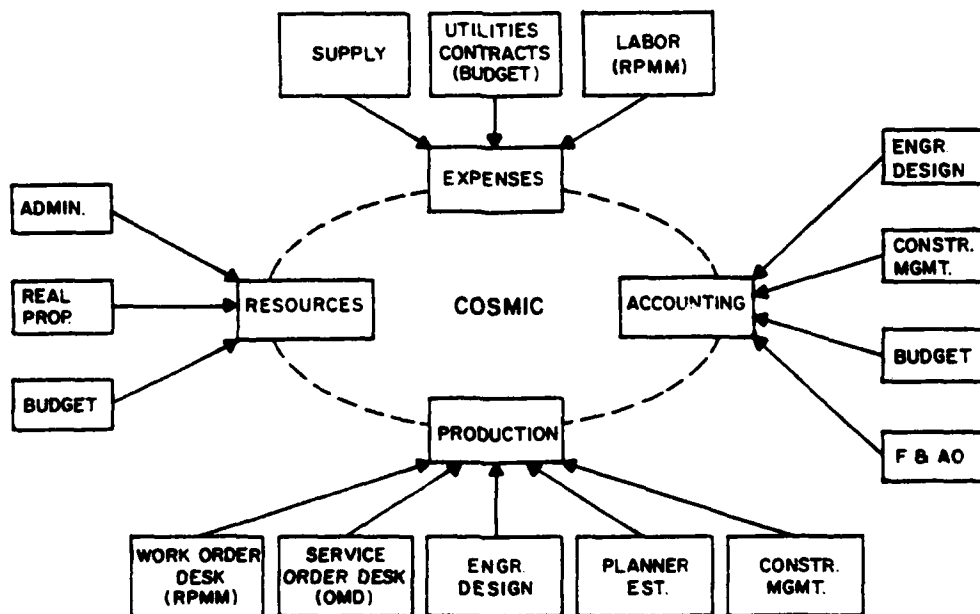


Figure 62. USAEA, CA functional sources of COSMIC data.

A major upgrade to COSMIC in FY85 resulted in the following changes:

1. Expanded computations and data processing--

- Overhead cost for labor and equipment usage computed (L&E)
- Overhead postings to PM jobs computed
- Year-to-Date (Y-T-D) cost accumulation and matching billed amounts processed.

2. Improved data resources and interface linkages--

- Accessibility to completed jobs and history files
- STANFINS transactions linkage
- DA Form 2544 RPMM assigned a number
- Project orders or multiyear contracts
- Labor data and document number
- Discounts/rebates.

Interfacing Programs²³

COEMIS provides billed amounts against each customer's DA Form 2544 number and then prepares "transactions for others" (TFO), or a Standard Form 1080 bill as a voucher for transfers between appropriations and/or funds. The TFO transactions (STANFINS) constitute 75 to 85 percent of total transactions by dollar amount; the Standard Form 1080 bills constitute the remainder. The Financial Accounting Office (FAO) of each installation receives STANFINS input cards for identifying disbursements, which the BDE matches against USAEA,CA customer funds; the Form 1080 bill received from the District then shows the billed amount that will be the same as the amount disbursed. Each reimbursable customer or installation FAO and the FMB of USAEA,CA receives an Account Processing Code (APC) breakout on a card for use in cost control and billing verification.

COSMIC Applications

The cost and production support provided by the COSMIC software and accounting support are described below.

Expenses

FESS records supply and procurement operational data, and tracks information related to procurement, shop stock, warehouse accounting, materials ordering, and Inventory and Property Account records.²⁴

²³ G. W. Siegel and W. A. Miller.

²⁴ *Facilities Engineering Supply System (FESS) Reports Manual* (Facilities Engineering Support Agency [FESA], June 1985).

LEADGOLD is a set of programs to review, edit, and store L&E costs for each job performed by USAEA,CA.²⁵ FMB uses the data entered through LEADGOLD to charge customers for services performed by USAEA,CA. Precise entry is necessary to ensure correct billing amounts for USAEA,CA customers and accurate job order cost accounting through IFS. Figure 63 shows an L&E Utilization Card. Information on this card is used when entering data in LEADGOLD.

CONTRACTS records contract amounts (in dollars) in the Resource Data Base. UTILITIES records dollar expenditures for utilities in the Resource Data Base.

Accounting

FUTURE is a system for electronic tracking of engineering design and construction funds between USAEA,CA and BDE, with distribution to respective projects.²⁶ FUTURE allows simultaneous access to users, but different levels of security are maintained. Generally, read only access is provided, but funds transmittal and receipt acknowledgements are allowed to those with this functional responsibility.

BILL generates USAEA,CA customer bills and creates the transactions for COEMIS and STANFINS.

Production

FEJE is used to estimate WOs and to exchange information with WONDERS.²⁷

WONDERS processes both WO and SO log-in, status, and cost data records.²⁸ Its functions are:

1. Work Orders--contains status information and actual costs on WOs. Figure 64 is an example of the Facilities Engineer Work Order (DA Form 4283) from which data are obtained for input to the WONDERS system. This feature:

- Allows immediate update of WO information
- Serves as the official cost summary for WOs
- Automates the work management function
- Allows access to cross-divisional data requirements
- Standardizes work management information across supported installations.

2. Service orders--stores all SO records with associated cost data.

WONDERS also is classified FOUO. Access is restricted because WONDERS holds official Government estimates on WOs on which private contractors will bid.

²⁵ *Operating Instructions for Adding and Maintaining Records in LEADGOLD* (USAEA,CA, May 13, 1987).

²⁶ *Futures User's Manual* (CENAB, November 1986).

²⁷ *Facilities Engineer Job Estimating (FEJE) System Description* (FESA, October 1982).

²⁸ *WONDERS User Manual* (CENAC, May 1984).

FACILITIES ENGINEERING WORK REQUEST - XFA, XFB, XFC																																																																							
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DA FORM 420-8 1 AUG 78 4208 EDITION OF 1 FEB 78 WILL BE USED UNTIL EXHAUSTED.

WHITE (ORIGINAL) - PROJECT FILE COPY
 PINK - FORWARD TO KEYPUNCH AFTER OF "APPROVAL ACTION" BLOCK
 BLUE - SUSPENSE FILE

Figure 64. Example Work Order.

3. PROJECTS is a project management file program used by USAEA,CA to monitor OMA projects (more than \$10K in construction costs) through the programming, design (in-house or by an architect-engineering firm), and construction phases.²⁹ Information is traded with WONDERS. It contains Government estimates in WOs to be bid by private contractors. Project reports can be run by RPMM/users as needed.

Resources

ADMIN tracks all USAEA,CA employees and positions for the current fiscal year. SF 52 is an added capability to ADMIN for processing those transactions.³⁰ Each SF-52 action is maintained as a separate record that can be updated when new information is available. This system is classified FOUO/Privacy Act Data.

²⁹ Staff Engineers PROJECTS Management System (CENAC, August 1987).

³⁰ Operating Instructions for Entering and Maintaining SF 52 Tracking System Records (CENAC, May 1987).

TABLES is a database containing verified information which is used by the COSMIC programs for editing purposes. The tables consist of data such as installations, facilities, and legitimate reimbursable codes.

Reliability and Effectiveness of ADP Systems

The basic impact of the COSMIC system on centralized RPMA management is improved response time, which is critical to efficient performance of RPMA services.

Phase I

Effectiveness/Efficiency. Evaluation of the automated system after the modifications in FY85 indicates use and accuracy of data obtained from the system. Furthermore, the cost of processing data has been lowered.

Dependability. Table 18 summarizes the input transactions and error rates of the IFS/COSMIC system. Improper data entries have been a universal IFS problem; the data checker in the COSMIC system does eliminate improperly formatted data, however. Better training and equipment have now improved data quality. These improvements have encouraged a corresponding increase in input transactions as shown in the table.

Cost. Table 19 summarizes the cost of processing the Expensed RPMA Dollars into IFS. Note that with the updated system, the cost of processing is reduced by half.

Table 18
COSMIC Operating Performance (IFS Use and Accuracy)

	FY80 (MDW)	FY81 (EA,CA/MDW)	FY84 (EA,CA/Ph. I)
Input transactions	150,000	350,000	550,000
Input error rates	> 40%	> 25%	< 25%
Cost entered into IFS	\$10M	\$30	\$50
Annual RPMA program	\$30	\$30	\$50

Table 19
Cost of Accounting Information for IFS*

	FY80	FY84
RPMA Expenses	6.4 ¢ per Dollar	2.2 ¢ per Dollar
Costs:		
USAMSSA	\$479K (IBM 360)	\$275K
MDW	\$166K (WANG MVP)	\$800K (Auto. Systems)

*Cost of processing expensed RPMA dollars into IFS. All prices are in FY88 dollars.

Phase II

Effectiveness/Efficiency. The present combination of the FTB contractor's IFS and its interface with the USAEA,CA COSMIC system is workable but should be studied for simplification opportunities.

Dependability. In a Performance Evaluation Board quarterly evaluation meeting at FTB, it was mentioned that IFS continues to have some problems, such as power surges causing loss of data and slow closeout of WOs. These problems should not affect an interface with the contractor, but may limit electronic linkage.

Status Evaluation

WONDERS has been an especially valuable tool for expediting USAEA,CA work. The IJO information and WO (DD Form 4284) processing supported by WONDERS provides a dynamic status tracking ability for each active job. This package is considered essential at all RPMOs; it provides simplified tracking of funds, consolidation (cross reference) of work management and financial management data, and an effective communications link.

With software developments, a general upgrade in computer systems availability and usage occurred between FY83 and FY85, as shown in Figure 65. In these 3 years, usage time rose sixfold and computer storage capacity increased threefold.

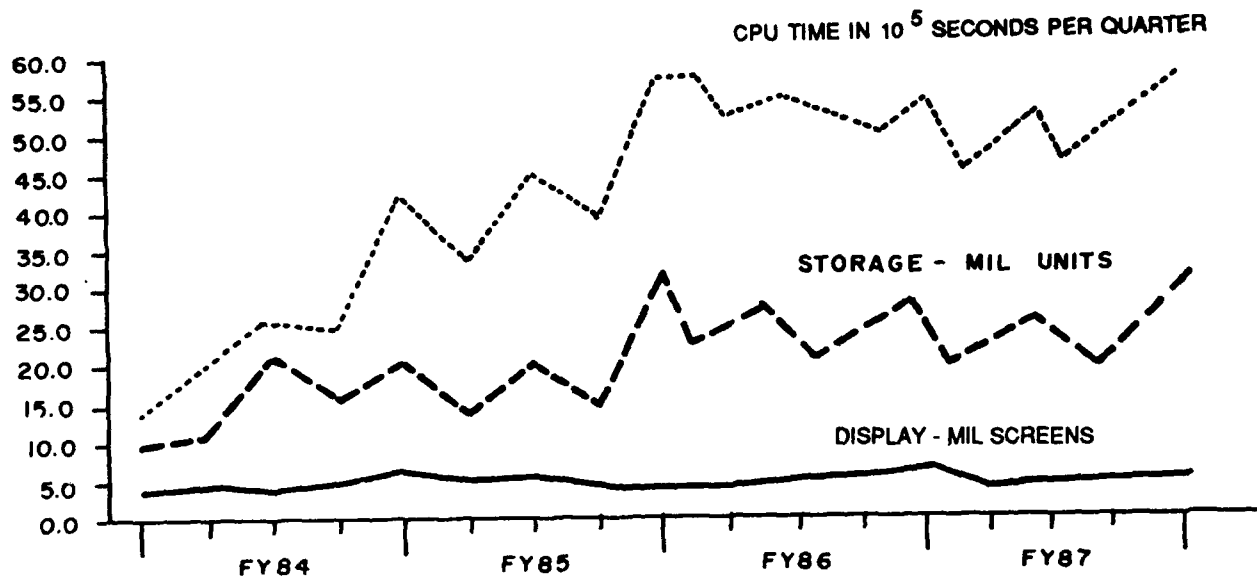


Figure 65. ADP usage trends, FY81 to FY88.

9 RPMA MANAGEMENT

USAEA,CA has established and operated an RPMA organization in NCR with centralized responsibility for installations under three MACOMs (MDW, INSCOM and TRADOC), and at six locations. RPMOs are the field operating arm of USAEA,CA at these locations. Performance data from RPMA operations were collected for the two consolidation phases: Phase I from FY82 to FY86 and Phase II from FY87 to the present. These data were evaluated to determine if the RPMA support provided by USAEA,CA is effective and efficient.

Scope of Current Operations

In FY88, all RPMA support was provided by USAEA,CA in a Phase II consolidation environment with responsibilities for both in-house and CA contracted modes of operation. MDW and AHS installations were moved into USAEA,CA under a Phase I consolidation (FY81 and FY82). FTB, having changed to CA contracting in FY86, was incorporated into USAEA,CA under the Phase II consolidation (FY87), with the RPMA responsible for inventorying the work under a QA program.

Management Structure

RPMA management for in-house or CA mode of operation is performed at each site by the RPMA under the direction of an RPMM. The RPMM is the most visible source of productivity for USAEA,CA to the customer and performs in accordance with RPMA functional requirements and the demands of the particular task as administered through the ISE. (In actual practice, the RPMM at each MDW post is delegated some customer interface and Post Commander reporting responsibilities that originally were intended to be reserved for a post staff engineer.)

RPMA Methods

Operating Modes. In general, the RPMOs at MDW/AHS installations manage all RPMA and perform routine RPMA with in-house shop personnel, whereas the RPMA at FTB (TRADOC) accomplishes RPMA by contracting. USAEA,CA has demonstrated effectiveness and responsiveness in both environments.

For in-house RPMA support, the work is completed through comprehensive planning by an active RPMM and RPMA staff, and through a skilled workforce. The RPMA at each post/installation is responsible for work receipt, work priority assignment, recordkeeping, shop scheduling, job performance, and cost accrual activities under RPMM supervision.

Contractor-performed RPMA requires detailed, duty-explicit contracts, careful monitoring by the RPMM, and fully enforced contract requirements by the Contracting Officer. In practice, the RPMM is responsible for representing the Contracting Officer and for performing the QA inspection/test program that verifies a contractor's performance. Based on the estimated cost, the RPMM acts either as Administrative Contracting Officer (ACO) or as a COR. As COR, the RPMM evaluates the contractor's performance from the QA input and, under a CPAF contract, recommends an award fee proportional to the amount of work that is maintained at acceptable standards.

Product Development Procedures.

Service orders. Authorized base personnel can call in SO requests to the Service Order Desk, where the information is verified and recorded; the responsible shops are notified and the SO is immediately scheduled according to its priority.

USAEA,CA has two SO processing procedures:

1. Service calls at MDW/AHS are received by OMD and recorded on the WONDERS ADP system. WONDERS is accessed routinely by the responsible shops for immediate scheduling.

2. Service calls at FTB are received by the contractor and requests are entered into his IFS scheduling system.

Work Orders. For WO development, a customer can request a preliminary or design cost estimate for the intended project. From this estimate, the customer can activate the project by generating a DA Form 2544 Reimbursement Order and forwarding it directly to the RPMO for processing. Design and work performance follow. After a job's completion, USAEA,CA is reimbursed for the direct and allocatable expenses of the work.

Three procedures are used:

1. Routine, in-house--ECD or the RPMM (if very routine) determines who will design the job and whether work will be done in-house or by contract; the decision is influenced by the price and technical level/area of the work. The RPMM identifies all required materials on a DA 2702 BOM, which is sent through SMD to the BDE Procurement Section at Cameron Station for acquisition. SMD collects and delivers the materials to the responsible shop designated by the RPMM. Figure 66 shows how an IJO is processed when in-house labor is used.

2. Routine, contractor--USAEA,CA determines if design is within a CA contractor's responsibility and if the design will be done in-house or by an AE contractor. Figure 67 illustrates the CA-contracted IJO process.

3. Single contract IJO--an individual contract can be awarded to perform a single IJO.

In-House Functional Elements.

Customer Request. RPMA work is initiated when the customer identifies what is wanted and when the work is needed on a Work Request DA Form 4283. Funds to do the work are released through a Reimbursement Order, DA Form 2544.

WR Processing. The Work Request is processed by the following RPMO elements:

1. Work Order Clerk--receives DA Form 4283 for non-SO work from the customer; establishes and maintains job control files; carries out archival procedures when the job is completed or canceled.

2. Work Order Chief (or RPMM)--supervises WO operations; reviews and approves the scope of the DA Form 4283, and generates a WO.

3. RPMM--controls RPMO operations; if the WO is to be done in-house, classifies the jobs (K or L account), sets priority and price; manages the work through the planner/estimator to ensure the best design and work performance resources available for the task.

4. Planner/Estimator--interfaces with the active MACOM participants to define the scope of work; assesses customer's needs and the compatibility of the job with available in-house talents; estimates price for the job and recommends how to assign the job.

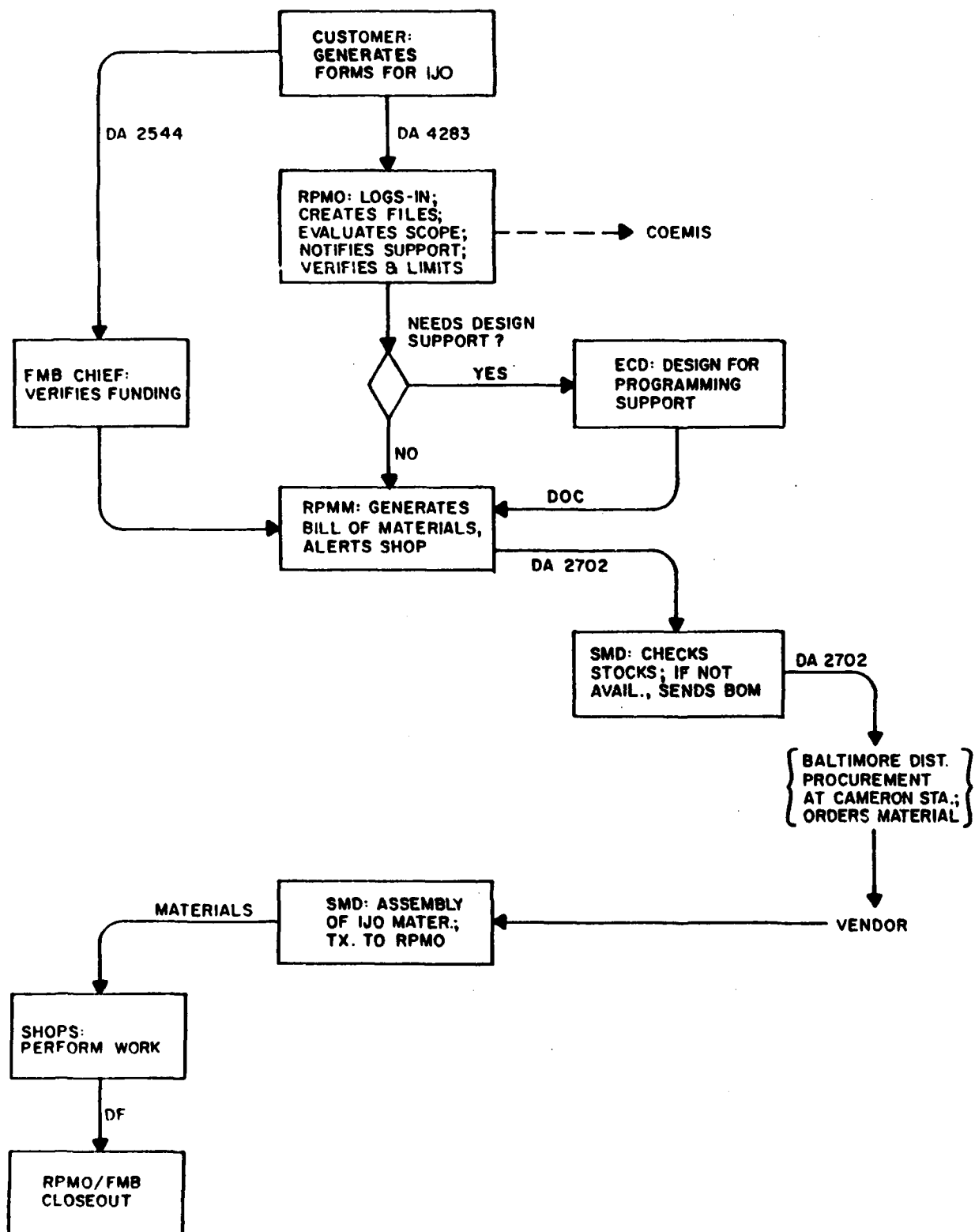


Figure 66. Procedure for IJOs performed in-house.

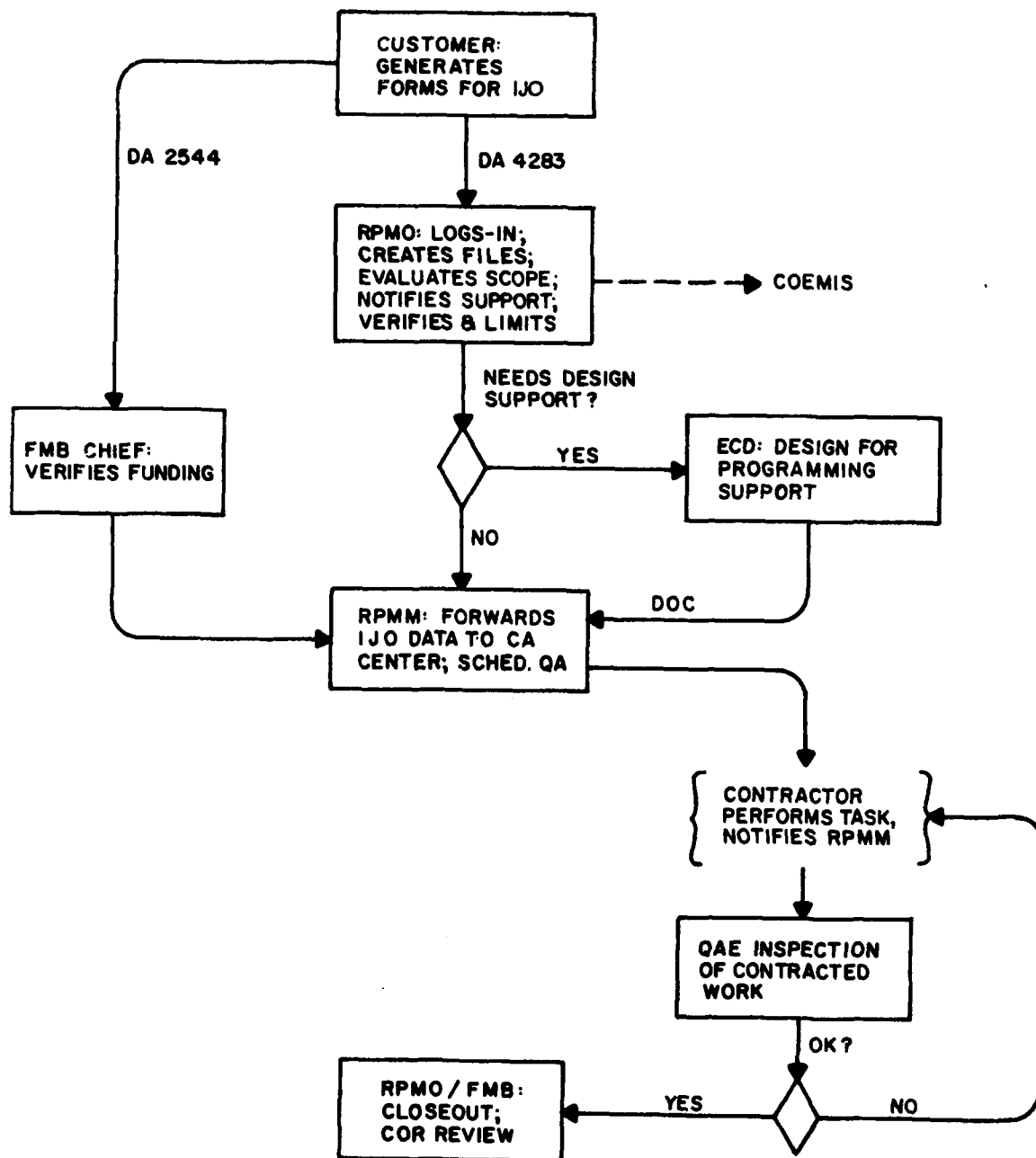


Figure 67. Procedure for IJOs performed by a CA contractor.

5. Craft shop foremen--manage the craftsmen to complete the work.

RPMO Role. As indicated above, the RPMO (WOC or RPMM) generates the WO (DA Form 4284), and then determines the best or required path for design and implementation. If repair or maintenance construction is involved, one of the following cases will apply:

1. In-house design may be performed at a rudimentary level by the planner/estimator in the RPMO, at a routine level (or higher) by the Design Branch in ECD, or by an A/E contractor, or, if the design is unusual or the estimated cost of the total job is greater than \$25K, by BDE.³¹
2. Design may be contracted to an AE specifically selected for the work by the BDE; the design also may be included with a total design-plus-work package and opened for bidding.

Contracting Elements. For IJO contracting, work may be contracted either through a Purchase Order without competition if under \$2.5K, or by competitive bidding if under \$25K, by the District's EA,CA Procurement Office; larger contracts are bid competitively (and, if greater than \$100K, also administered) by the Procurement Branch within CENAB-CT-E at BDE.

RPMO Mission Statements³²

RPMO at MDW Posts. The RPMO directs M&R of all buildings, grounds, and utilities functions. It also coordinates RPMA with the ISE; supervises fire prevention and inspection; and manages custodial work, refuse handling, and other services. The RPMO acts as COR for all RPMA services and construction contracts. RPMO includes the following branches and functions.

1. Work Coordination Branch--directs and coordinates RPMO production function with other USAEA,CA divisions/elements; supervises the availability and application of resources for completion of all work; and provides data for all management functions, conservation programs, and related activities.
2. Buildings and Grounds Branch--plans, programs, and then completes M&R on structures, buildings, roads, grounds, and drainage systems; manages the land (forest, fish, and wildlife programs); B&G offers advice on preparation of contracts and supervises service contract work. At CS, this branch also provides electrical generator support units on- and off-post. The Fort Myer B&G Branch has the additional function of performing metal work.
3. Utilities Branch--supervises and coordinates operations and M&R of utilities plants and systems including water, sewage, electrical, heating and ventilation, and refrigeration and air-conditioning. This branch also maintains or repairs kitchen/bakery appliances, petroleum-oil-lubricant dispensing systems, and metal components for buildings; it performs sheet metal work, blacksmithing, machinist work, and welding. The Utilities Branch establishes PM objectives for utility systems and programs. In addition, it advises on contracts preparation and supervises all contract work for utilities services.
4. Fire Prevention/Protection Branch--provides fire-fighting, prevention, and inspection services, including routine checks of equipment and installed systems; this branch also acts as a source of, and provides the maintenance for, post fire extinguishers.

³¹ USAEA,CA Operations and Work Management Manual.

³² Letter to: CDR, USAMDW; From: LTC Ernest D. Pioxotto, U.S. Army Comptroller; Subject: Suspension of CA During USAEA,CA Consolidation Test (10 February 1983).

RPMO at AHS (INSCOM Installation). The AHS RPMO directs onsite maintenance, operation, and repair services for buildings, grounds, and utilities. It also coordinates RPMA with ISE; supervises fire prevention and inspection services; and manages custodial, refuse handling, and other services. The RPMO acts as COR for RPMA service contracts. At AHS, the RPMO has two branches: Maintenance and Operations and Fire Protection.

1. Maintenance and Operations Branch--controls and supervises all maintenance, construction, operations, and repair shops. This branch operates with four active sections, including: Utilities Systems, Special Projects and General Support, General Maintenance, and Custodial/Roads/Grounds. These shops have the following functions:

Utility Systems Shop--responsible for all heating, plumbing, and air-conditioning equipment over 40 tons; also operates and maintains a Waste Destruction Facility.

Special Projects Shop--performs electrical and miscellaneous work; also responsible for all exterior electrical work and emergency generators.

General Maintenance Shop--performs PM for all buildings; maintains all interior electrical systems; and operates and maintains all air-conditioning and refrigeration equipment under 40 tons.

Custodial/Roads/Grounds Shop--maintains all roads and grounds on the installation, and provides in-house custodial operations (on a shift basis).

2. Fire Protection Branch--provides a full 24-hr fire-fighting protection service. This branch also provides inspections and trains fire wardens and building coordinators.

RPMO at Fort Belvoir (TRADOC Installation). The FTB RPMO directs the onsite CA contractor's performance of M&R for buildings, grounds, and utilities. This RPMO also coordinates RPMA with DEH; supervises in-house fire prevention and inspection services; and manages custodial, refuse handling, and other contracted services. It acts as COR for RPMA services, construction, and CA contracts. Figure 68 shows the configuration of RPMO functions in a CA contractor environment.

RPMA Transitions in USAEA,CA Operations

The evolution in RPMA procedures and responsibilities reflects a changing RPMA environment during the USAEA,CA test. This study evaluated the reasons for, and impact of, these changes. The findings are described below.

Overview

USAEA,CA was intended to provide a regionally combined, centrally directed RPMA for the NCR. As a test organization, USAEA,CA was directed by the IPG (FY81) to serve multiple MACOMs in three consolidation phases.

Operational Changes³³

In-House Changes. RPMO operations were originally planned by the IPG as well structured, sequential processes, such as the SO flow shown in Figure 69. A need for improved system responsiveness has resulted in some updated processes, including automated data management (Figure 70).

³³ R. Blackmon; *USAEA,CA Operations and Work Management Manual*.

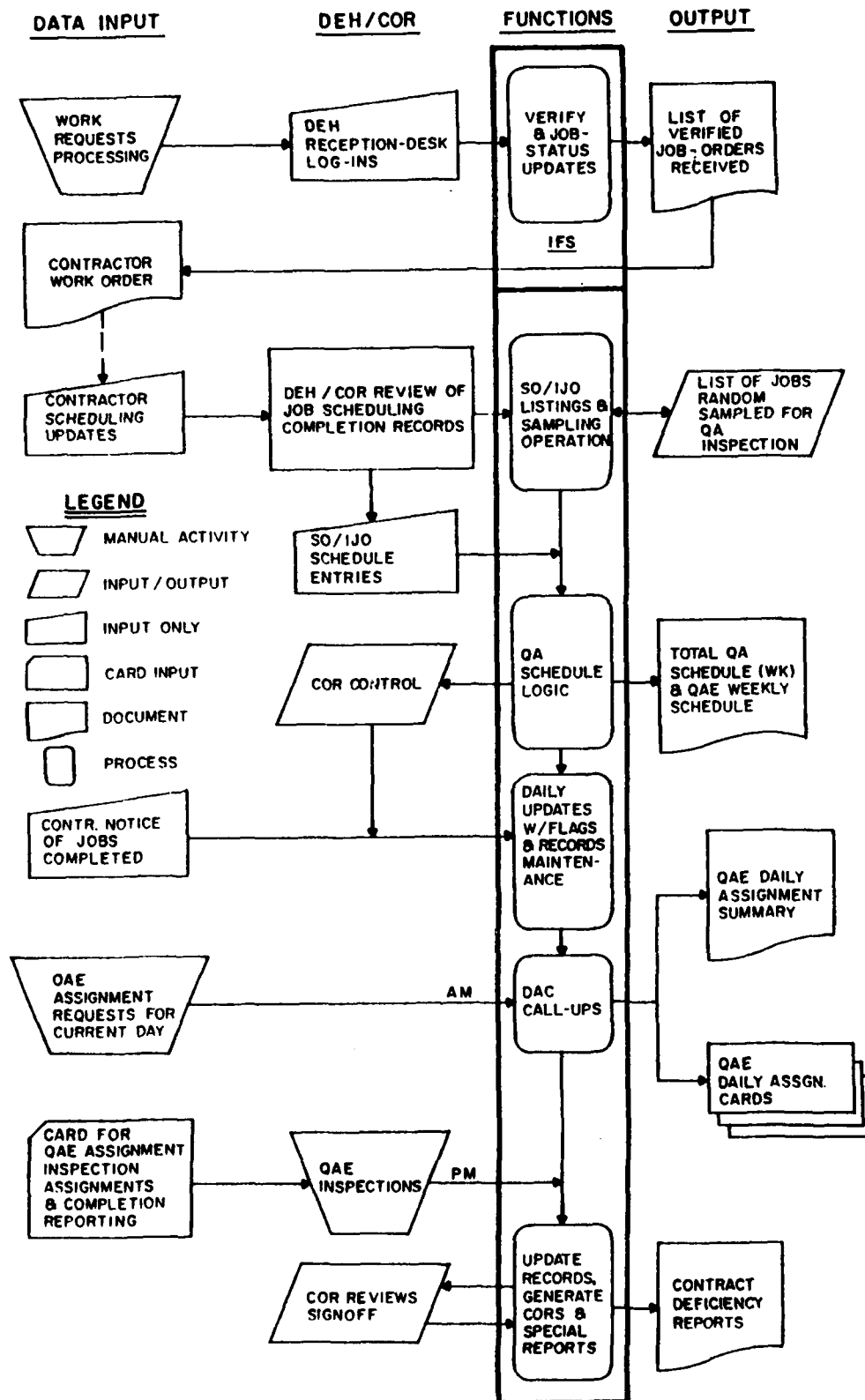


Figure 68. RPMO functions in a CA contract environment.

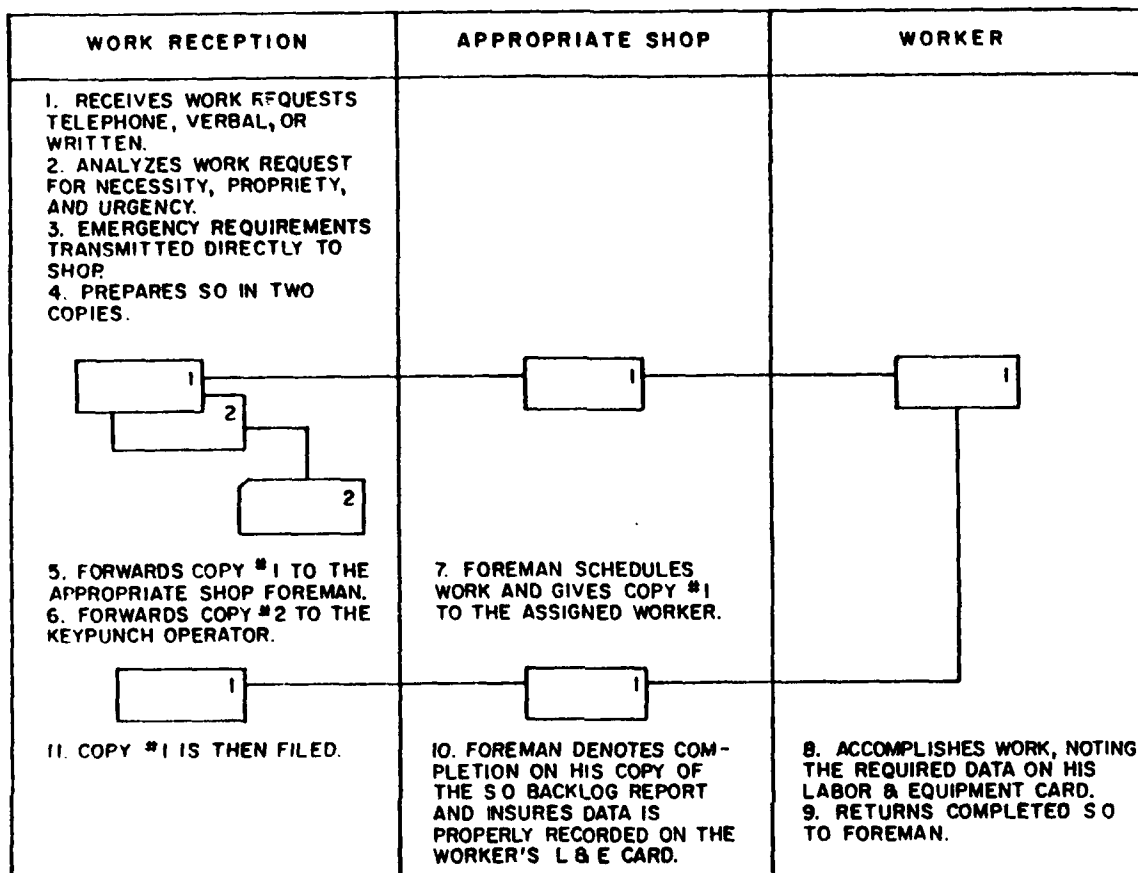


Figure 69. The SO process in FY82.

In general, the customer sends the SO or Family Housing upkeep requests directly by telephone or mail to the Service Order Desk at OMD or, if contracted, to the contractor's facility for action. A JOR is then routed on a DA Form 4283 to the post/installation RPMO for coordination of needed USAEA,CA support and shop scheduling.

As discussed in Chapter 4, the Service Order Reception and Work Request Desks originally were combined under OMD operation, but in FY83, the WO function was decentralized to the RPMOs when an effort was made to shorten the IJO response time.

CA-Contract Procedural Changes. When RPMA support is by CA contract, the RPMM's role changes to that of execution management, QA manager, and ACO or COR. The RPMM monitors the timeliness and quality of the contractor's output, and continues to:

- Review/approve SOs
- Coordinate IJO work effort and direct the method of IJO completion

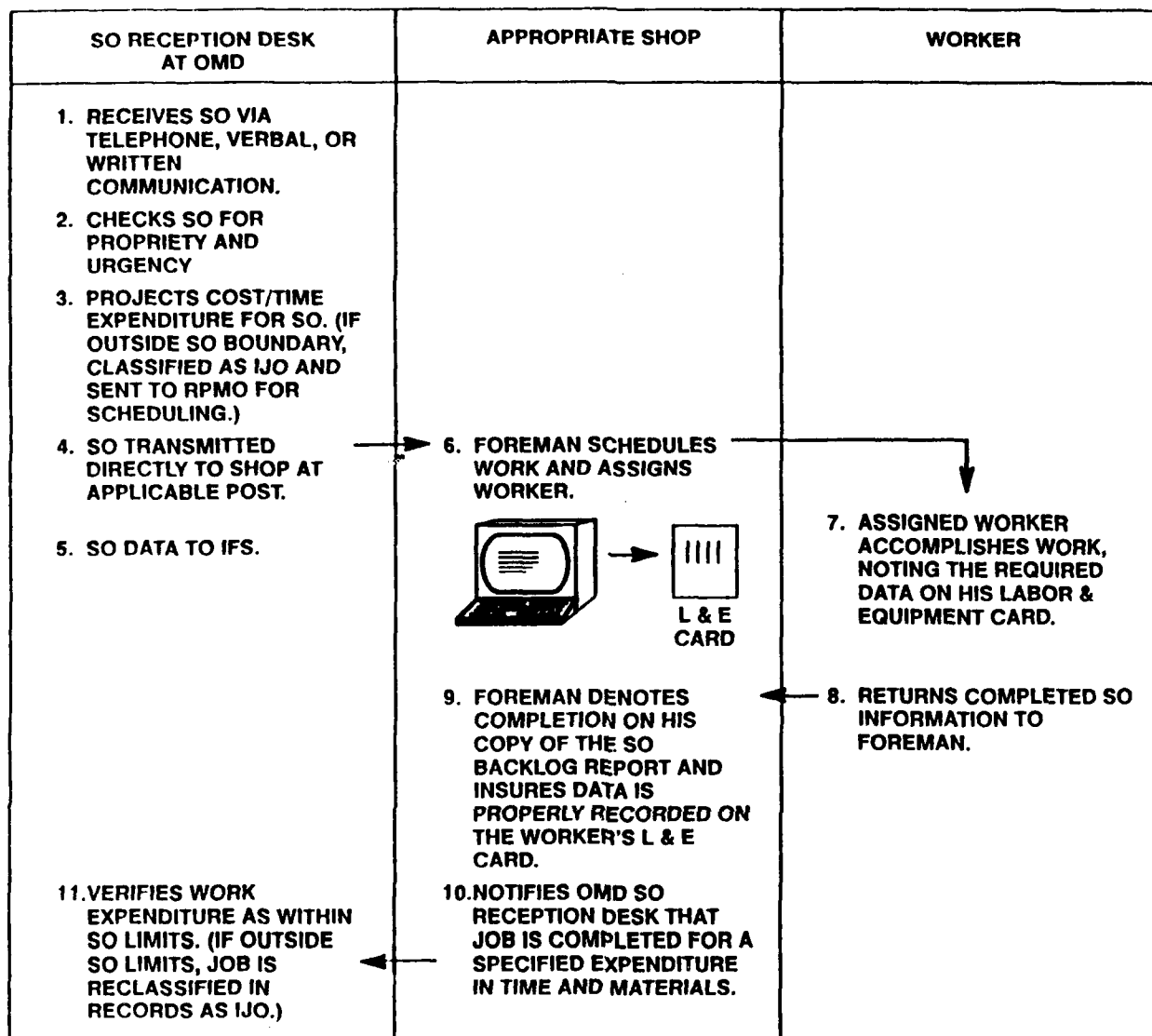


Figure 70. The SO process in FY88.

- Review cost estimates of work orders.

There have been no changes in this relationship under either the VHFS or FTB RPMA contracts.

RPMA Performance Methods Under USAEA,CA

The complete range of the USAEA,CA support experience was assessed--from routine, large-volume RPMO activities to the one-of-a-kind RPMA tasks (that may be important, but in a different frame of reference). First, the quality of support was examined and then the record of operational experience was evaluated.

Sufficiency of Operating Methods

Procedures representative of in-house RPMA at the MDW and AHS installations from FY82 to FY86 (Phase I) are:

1. Service Orders--the sequence of SO acceptance and order processing has been previously discussed and is shown in Figure 70.
2. Job Order Request/Individual Job Order--the JOR/IJO process is depicted in Figure 71.

VHFS was consolidated in FY82 as a CA-contracted installation. Procedures are similar to the CA methods developed for Phase II at FTB in FY87, and are described next.

The Phase II consolidation of FTB doubled the RPMA volume for which USAEA,CA is responsible. Figure 72 shows how JOR/IJO work is processed and monitored.

Special productivity challenges can be feasibly supported by an organization as large as USAEA,CA to boost RPMA output levels, product quality, or services offered. One such pursuit in the NCR test has been the support to the Quick Return-on-Investment Program (QRIP) and other incentive programs offered by USACE.

Quick Return-on-Investment Program. USAEA,CA has made effective use of QRIP, the funding source for special projects with a demonstrable return on investment. QRIP is part of the Productivity Capital Investment Program that funds equipment purchase for repayment in 2 years or less. All savings realized in this program remain within USAEA,CA for distribution. The payback from these projects helps stretch the amount of work done annually for each allocated dollar. For FY86, the QRIP savings were estimated at \$206K.

Special Services. Elimination of facility environmental hazards and pest control are two areas of USAEA,CA expertise that have been applied effectively within the NCR RPMA. These services include providing an information source to USACE generally. Examples of RPMA special services are:

1. A pest problem had become endemic at Henderson Hall (USAMC). Since USAEA,CA employs an entomologist, help was requested. This pest control effort was so successful that USAEA,CA was asked to continue inspecting and monitoring Henderson Hall in the future.
2. Asbestos in older buildings has gained recognition within the Army and the private sector as a hazard to humans. USAEA,CA has identified asbestos hazards at NCR installations and determined the best methods of removing asbestos-containing construction materials.

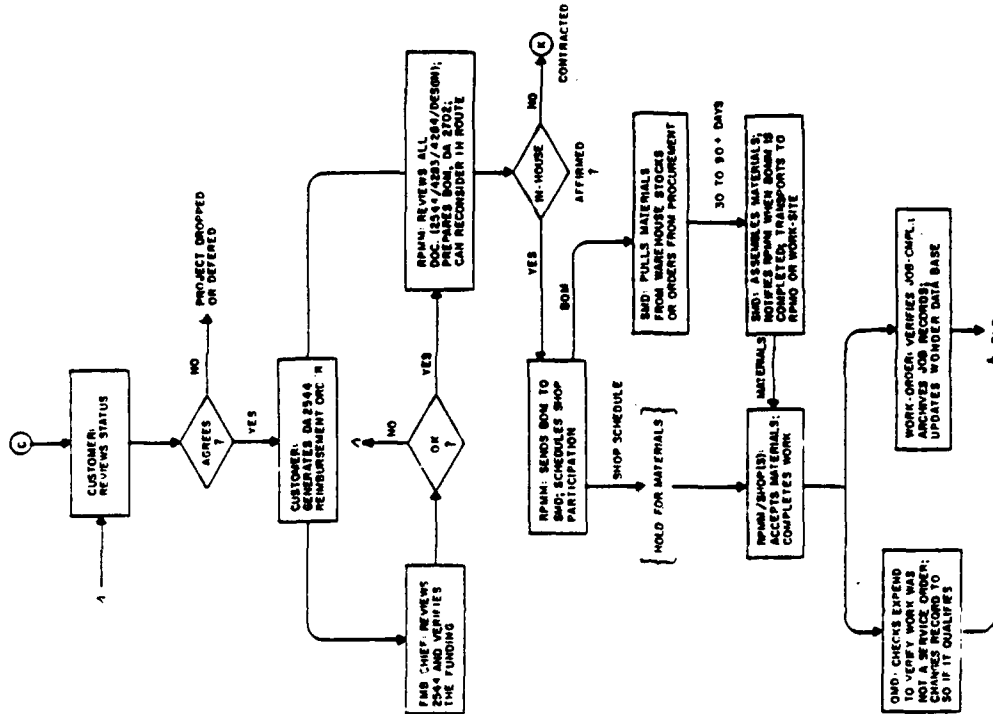


Figure 71. Processing sequence for Job Order Requests.

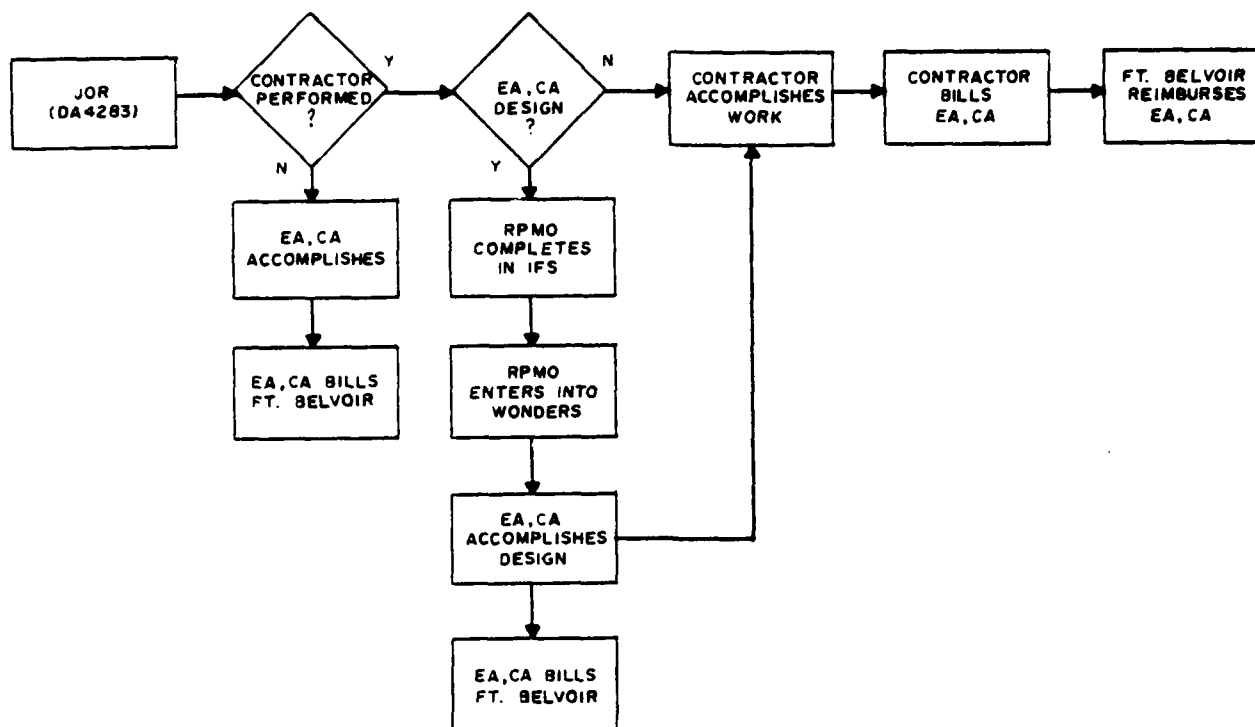


Figure 72. Processing sequence for JORs/IJOs at Fort Belvoir (FY87).

RPMO Operating Records

In-House RPMA Record (Phases I and II). MDW and AHS Phase I test operations have been notable for the reliability of RPMA support and the lack of functional emergencies. Nonproductive manhours (overhead) have been reduced and the distribution of work types improved while full productivity has been maintained (Figure 73); variations in post RPMA manpower are plotted in Figure 74. These figures provide a sample of the MDW and AHS operations from FY82 to FY84; notice the following:

1. Service Orders--during Phase I, USAEA,CA processing of SOs initially occupied 21 percent of the RPMO time (on average). This percentage has decreased for Fort Myer and Fort McNair over time, and has increased for Cameron Station, with AHS remaining the same.

2. Individual Job Order--Phase I IJO performance by USAEA,CA has remained nearly constant; an apparent increase for Fort McNair may be due to performance of some PM work in the IJO approval cycle.

CA-Contracted Operations (Phase I). The operating experience of VHFS under USAEA,CA was hindered at the start of consolidation by a deficient CA contract developed the previous year. These deficiencies became immediately apparent during the VHFS baseline studies of FY81. In early 1983, preparation for a new contract began; a PWS and Statement of Work were prepared, followed by a contractor reselection process in FY84. Negotiations with the existing contractor for a 90-day extension to the old contract failed. USAEA,CA reconstituted the workforce and successfully arranged for

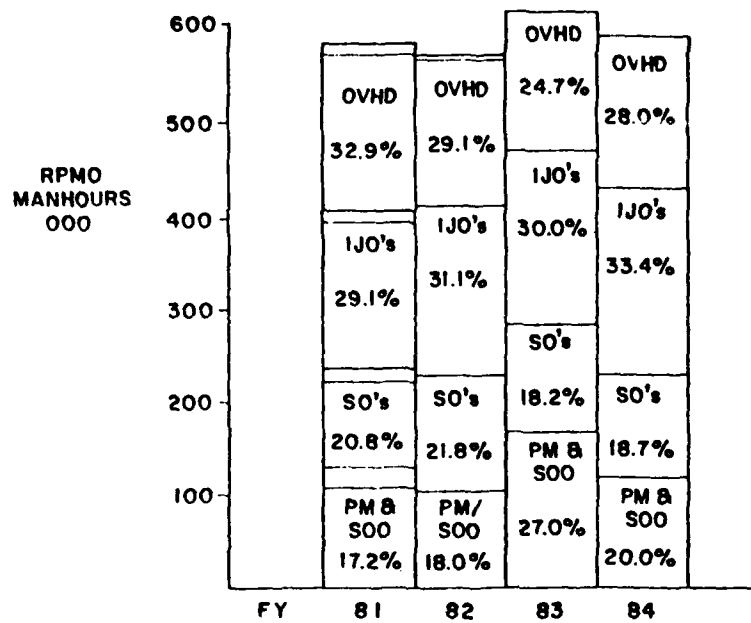


Figure 73. Phase I productivity levels, FY82 to FY84.

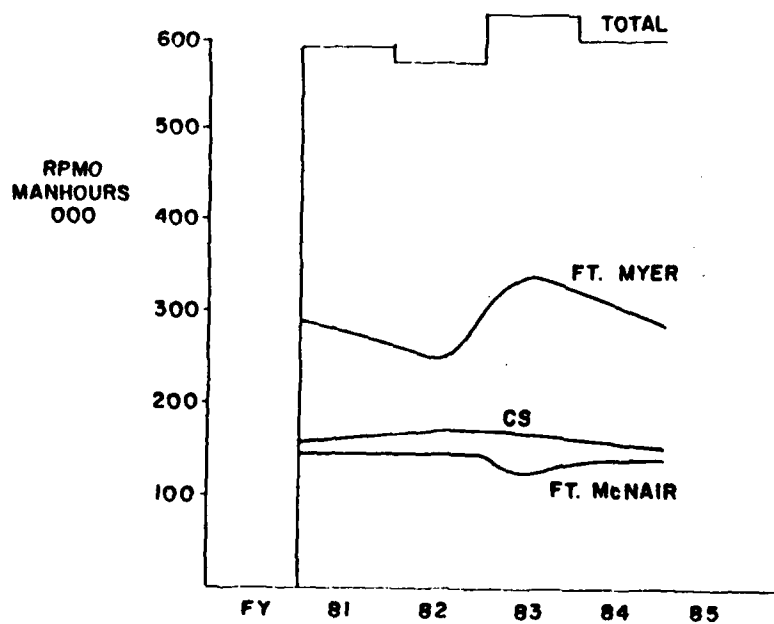


Figure 74. MDW RPMA manhours for FY81 through FY84.

emergency interim RPMA support.³⁴ The next contractor was then selected and operated until the contract was terminated by the Government in FY86; a third contractor operated effectively under RPMO (USAEA,CA) direction until the withdrawal of VHFS from the USAEA,CA test at the close of FY87.

Phase II FTB Operations. In FY87, USAEA,CA, in cooperation with the FTB DEH, monitored contractor performance and developed plans for a more equitable CA contract and upgraded QA enforcement. Action was initiated in FY86 to develop an FFP contract to replace the cost-plus approach that was in place. The new contract was to be improved and expanded over the existing version to address the RPMA needs for the diverse functional areas at FTB--then conducted on a multicontract basis.

Desirable changes to the existing contract provisions included:

1. GFE support--transferring responsibility to the CA contractor for vehicular support to RPMA operations would eliminate the need for replacing the current collection of worn-out equipment.

2. Automated QA Plan--a current draft plan could be modified to recognize the need for a multiuser network; an automated plan is expected to support the test-bed activities of the CA Management System (CAMS), a QA planning, scheduling, and reporting program being developed at USACERL.

Steps in the new CA contract development included:

1. PWS--funding was requested for the PWS in July 1986; a contractor was selected and began developing the PWS 2 months later. USAEA,CA was careful to coordinate the very transitional requirements at FTB in terms of their impact on the PWS (e.g., INSCOM was implementing plans to move into FTB, while USAES had plans to move out). An "85 percent draft" of the PWS was reviewed by USAEA,CA and comments were supplied to the contractor in May 1987; supplementary data and "add-ons" were included in the June 1987 draft. A final PWS draft was submitted by the contractor in July 1987.

2. Acquisition Plan--the Contracts Division of BDE reviewed the EA,CA draft of the proposed acquisition plan, and in April 1987 forwarded it to CENAD for higher approval; CENAD then reviewed and sent the plan to HQUSACE. Two revisions were requested by USACE, and in June 1987 the plan was forwarded to the U.S. Army Contracting Support Agency (USACSA) with a recommendation for approval. The plan was approved August 1988.

Efficiency of Centralized RPMA Services

Overall productivity and managerial effectiveness of USAEA,CA were judged by relating workload to the documented RPMA efficiency. An improvement over the baseline and a trend toward continued improvement were demonstrated. The measurements and surveys of RPMO performance levels for in-house and CA-contracted RPMA are described below to show how the centralized RPMA efficiencies were estimated.

³⁴ T. Purnell and S. Tarr, *A Report on Reconstituting an In-House Workforce From a Predominantly Contract Workforce at the RPMO, Vint Hill Farms Station, Warrentown, VA* (USAEA,CA, May 1984).

Work Management

Table 20 is a summary comparison of the levels of RPMA activities performed under the Phase I consolidation.

Balance in the Types of Work Performed. The choice of a longer-term viewpoint for work requests and the rapid reduction in backlogged maintenance and repair (BMAR) have had major influence on USAEA,CA:

1. Balance in work assignments--an immediate improvement in work balance over baseline records occurred under USAEA,CA management. The Phase I record for balanced productivity is shown in Figure 75. Work categories assigned to in-house forces are distributed within MDW/AHS as shown by the pie charts in Figure 75. The ideal breakdown should be:

<u>Work Type</u>	<u>Percent of Workload</u>
IJO	35
SO	15
SOO	25
PM	25

Recurring IJOs (RJOs) and Standing Operations Orders (SOOs) dominate the RPMA work distribution of USAEA,CA as shown in Figure 75 for FY87. The notable deficiency in performance indicated by these charts is the lack of an identified PM program at Fort McNair and Cameron Station at this time.

Table 20

Phase I In-House RPMA Cost Levels (1988 Dollars)

<u>Data Element</u>	<u>Baseline (FY79)</u>	<u>FY82 USAEA,CA</u>	<u>FY83 USAEA,CA</u>	<u>FY86 USAEA,CA</u>
Total cost to MACOM	51.1M	60.9M	61.7M	58.0M
MDW shop rate (total RPMA)	28.92/hr	31.51/hr	28.88/hr	34.35/hr
AHS shop rate	26.50/hr	28.02/hr	24.73/hr	28.32/hr
FTE man-years	646 (projected)	598	544	586

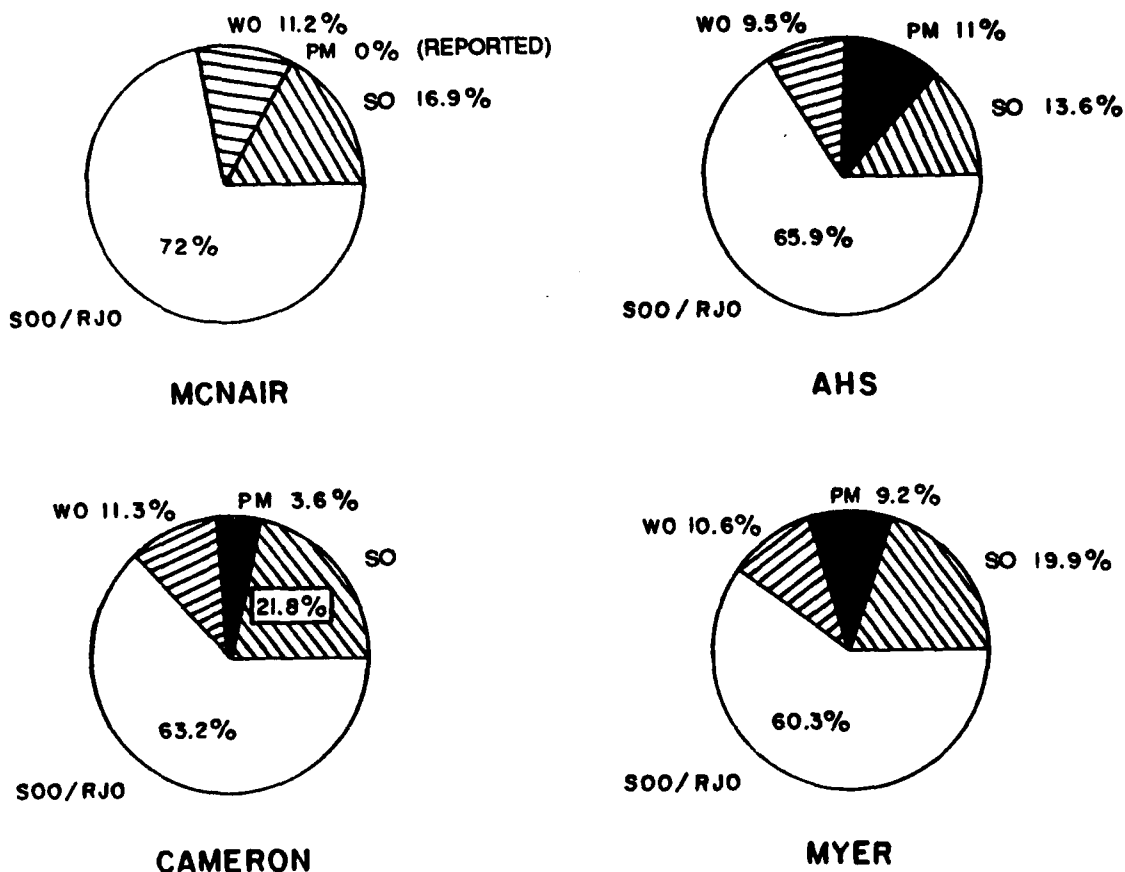


Figure 75. RPMA workforce distribution by installation, FY87.

As another balance test, Table 21 is a sample breakdown of FY86 jobs by J, K, L, and M categories. This table indicates the distribution of work requests that occurred for a given year. Note the immediate improvement here over baseline activities.

2. BMAR--convenient scheduling of postponed M&R can be difficult; the USAEA,CA RPMOs had reduced this backlog by 30 percent in FY84 with a 50 percent carryover to FY85. This problem was addressed vigorously and by FY87, BMAR for MDW/AHS was reduced to zero; Figure 76 illustrates this progress.

Personnel. RPMO personnel levels in actual and full-time equivalent (FTE) man-years are provided in Table 22 for each installation. Full staffing for USAEA,CA is desirable, but Command support to this task may be limited by long-term economic/planning environments. However, *successful operations* under the personnel deficiency are notable. As seen in Table 23, the USAEA,CA FTP roster of RPMO personnel for FY85 and FY86 is significantly below that projected by the IPG and early managers.

Table 21

Balance in Phase I Job Assignments: Percent of Jobs
Requested According to Work Classification

Classification	MDW, USAEA,CA Baseline	FY82	FY83	FY87, (est'd)
J	16 (\$10.1M)*	18	19	27
K	59 (\$30.1M)	52	51	50
L	4 (\$2.0M)	11	12	14
M	21 (\$11.3M)	19	18	9

*MDW RPMA baseline (FY79) expenditures in FY88 dollars.

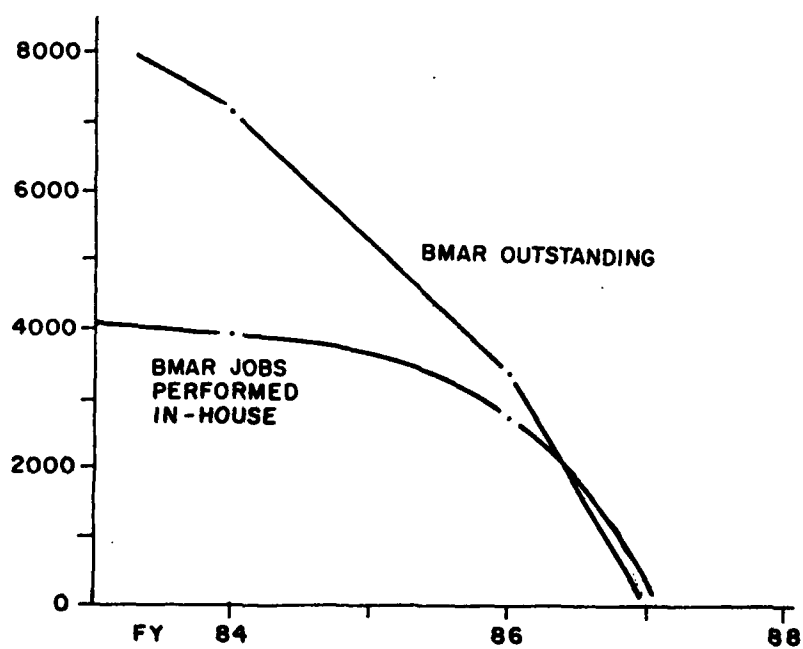


Figure 76. Decrease in BMAR levels FY84 to FY88.

Table 22
USAEA,CA Personnel Strength at RPMOs

Installation	Category	Planning Maximum	FY86		FY87	
			Actual	FTE	Actual	FTE
Cameron Stn.	GS	7	3	2	6	3.7
	WG-Supv	14	11	5.6	11	11.1
	WG-Craft	76	54	30.3	57	56.7
Fort McNair	GS	7	5	2.5	5	5.3
	WG-Supv	10	9	4.7	8	9.6
	WG-Craft	66	49	25.2	52	54.6
Fort Myer	GS	31*	31	24.0	29	44.3
	WG-Supv	15	14	7.4	14	14.0
	WG-Craft	151	103	52.6	100	105.5
Arlington Hall Stn.	GS	17*	16	12.2	16	26.3
	WG-Supv	9	6	3.1	5	5.4
	WG-Craft	95	65	32.4	60	78.6
Vint Hill Farms Stn.	GS	20*	20	14.6	20	28.3
	WG-Craft	1	1	0.5	1	1.0

*Includes Fire Department personnel.

Table 23
Craftshop Percent Staffing Below FY82 Projections

Shop Rosters	FY85	FY86	FY87 Auth. Spaces	Current FTP
AHS (being decommissioned)	32	35	26	96 (7-)*
MDW:				
Fort Myer	32	33	25	154 (5-)
Cameron Station	29	25	22	69 (7+)
Fort McNair	26	24	11	60 (14+)

*AHS has seven spaces that are authorized but not filled.

Equipment. Optimal use of assigned equipment requires an effective monitoring system for maintenance, availability, and assignments. Monitoring is difficult when the equipment inventory does not list the demand and usability for equipment items. For example, MDW grounds upkeep equipment was stored and not used more than 5 percent of the time for up to 2 years in FY85 and FY86 as follows:

- Fort Myer - 23 units
- Fort McNair - 11 units
- Cameron Station - 34 units.

These items lower the average equipment utilization for the USAEA,CA test organization. Elimination of aged and poorly used equipment and rental of such equipment when it is needed may be an item for further study. The usage rate of *active* equipment, however, may be impressive and should not be considered with the inactive.

Although the RPMOs have an acceptable equipment usage rate of just less than 40 percent, this may be a potential improvement area if a centralized, automated scheduling system could be implemented for quick return on extended loans of underused equipment. However, such a proposal must be preceded by a statistical study investigating the inventory age, overstocking, intermittent use, and/or inaccurate recordkeeping for all transportable RPMO equipment.

Figure 77 plots the equipment utilization rates for USAEA,CA over the past 5 years. The average use is shown to be between 30 and 40 percent of the available workhours. Note that there was no seasonal increase in demand during the 4th Quarter FY86 as there was in FY84 and FY85.

Divisional Overhead. USAEA,CA HQ and RPMO overhead must be recovered from the RPMA customers. The RPMO overhead is especially visible and must be kept at a reasonable level. The average overhead level for RPMOs is provided in Table 24, while Table 25 summarizes shop rates.

RPMO/RPMA In-House Performance Levels

Comparison of RPMO/RPMA services among posts/installations ensures consistent standards and allows communication of operating ideas. Selected measurements of inhouse RPMO effectiveness are described below.

Workload. The activity level for the RPMO should be related to the size and volume of jobs being processed by his/her RPMO, the range of jobs encountered, their frequency, and how quickly they are dispatched. These are local indicators of the administrative effectiveness for each RPMO, and are summarized as follows:

1. Total workload--when production efficiency and output quality are maintained under a very full workload, credit must be given to the dedication of shop craftsmen and the effectiveness of RPMO management. Table 26 compares baseline and FY87 RPMA levels for MDW/INSCOM installations; the number of SOs and IJOs processed and completed per year has remained at the same order of magnitude between FY82 and FY87.

2. MDW/AHS installation workload--SOs processed for each post/installation are listed in Table 27 whereas JORs/IJOs requested and scheduled are shown for the past 4 years in Table 28. The total number of jobs processed by the RPMO at Fort Myer from FY79 to FY87 is listed in Table 29.

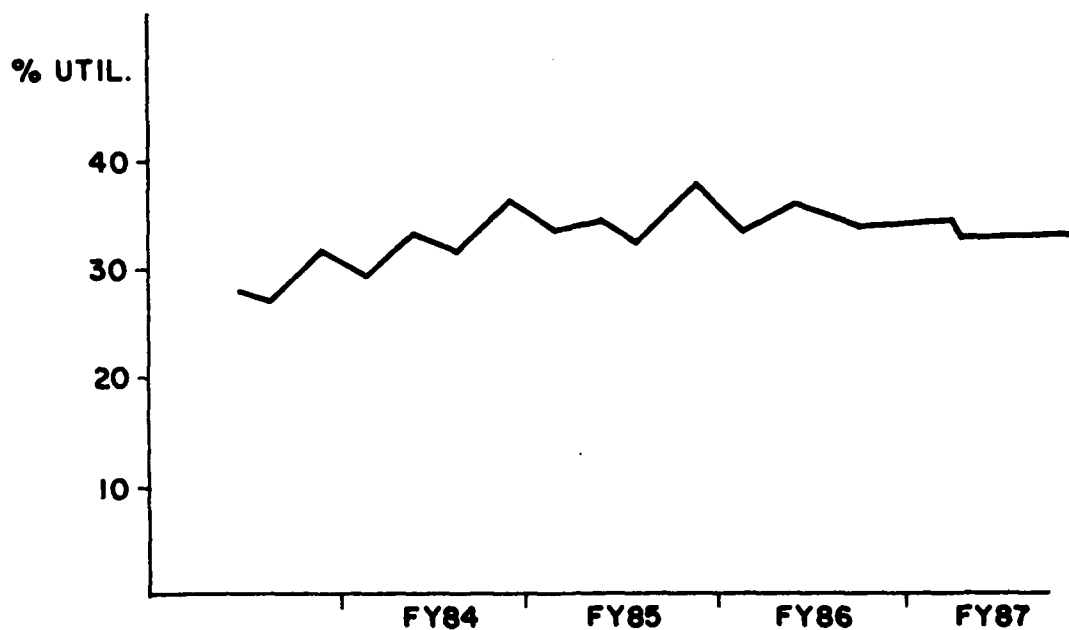


Figure 77. Equipment usage levels, FY83 to FY87.

Table 24

Overhead Charges (FY88 Dollars)

Overhead Type	Baseline	FY82	FY87
RPMO	6.7M	4.7M	6.4M
Shop	3.2M	1.2M	1.8M

Table 25

Shop Rates for Requested In-House RPMA Services (FY88 Dollars)

Installation	Baseline	FY82	FY87
MDW	33.65	31.51	37.23
AHS	26.50	28.02	29.49

Table 26
Total Workload Comparisons Between
Baseline and USAEA,CA RPMA Levels

Work Type Completed	<u>Total Number of Orders Completed</u>				
	FY 79* Baseline	FY82	FY83	FY85	FY87**
SO	32,112	29,904	30,023	27,700	27,327
IJO	819	1,009	756	1,475	1,190
SOO	301	107	153	NA***	-

*VHFS (with a baseline from FY80) is included here.

**Does not include Fort Belvoir.

***NA - Not available.

Table 27
Number of Service Orders Completed by In-House RPMOs

Post	Baseline	FY81	FY83	FY85 (est'd)	FY87
McNair	2900	4322	3135	4620	3461
Mycr	6600	11493	11172	8900	8965
Cam. Stn.	4090	4802	5658	4180	4807
AHS	2925	-	4830	3500	3956
TOTAL	16515	20617	24795	21200	27327
On-Time Percent	74%	75%	70%	NA*	80%

*NA - not available.

Table 28
Total IJOs Processed for MDW/AHS

Fiscal Year	Jobs Submitted	Jobs Sched.	Percent Accepted	Jobs by K/Slf.Help	Jobs Supported by In-House Shops
87	1693	1242	73	226	836
86	1740	1351	78	405	1238
85	2244*	1560	70	415	1060
84	1544	1103	71	NA**	NA

*Reflects doubling of IJOs assigned to Fort McNair in FY85.

**NA - not available.

Table 29
Total IJO Processing Record for Fort Myer

Fiscal Year	Number Submitted	Number Completed	Jobs Supported by In-House Shops	SMD Process. Records: No. of IJOs Waiting for Materials	Avg. No. Delay Days for Each IJO
87	911	336	239	157	81
86	840	447	280	199	86
85	1104	468	277	219	121
84	832	NA*	NA	152	152
Baseline		300	90(est)	NA	NA

*NA - not available.

(Volume/workload is used here not as a measure of effectiveness, but to indicate relative significance of the effectiveness measurements that were applied.)

3. Fort Myer Workload--at the MDW post level, Table 29 and Figure 78 show the disparity between what is requested by the customer and what is finally executed; greater filtering of these requests by the ISE could reduce the drop-out rate, which is up to 30 percent.

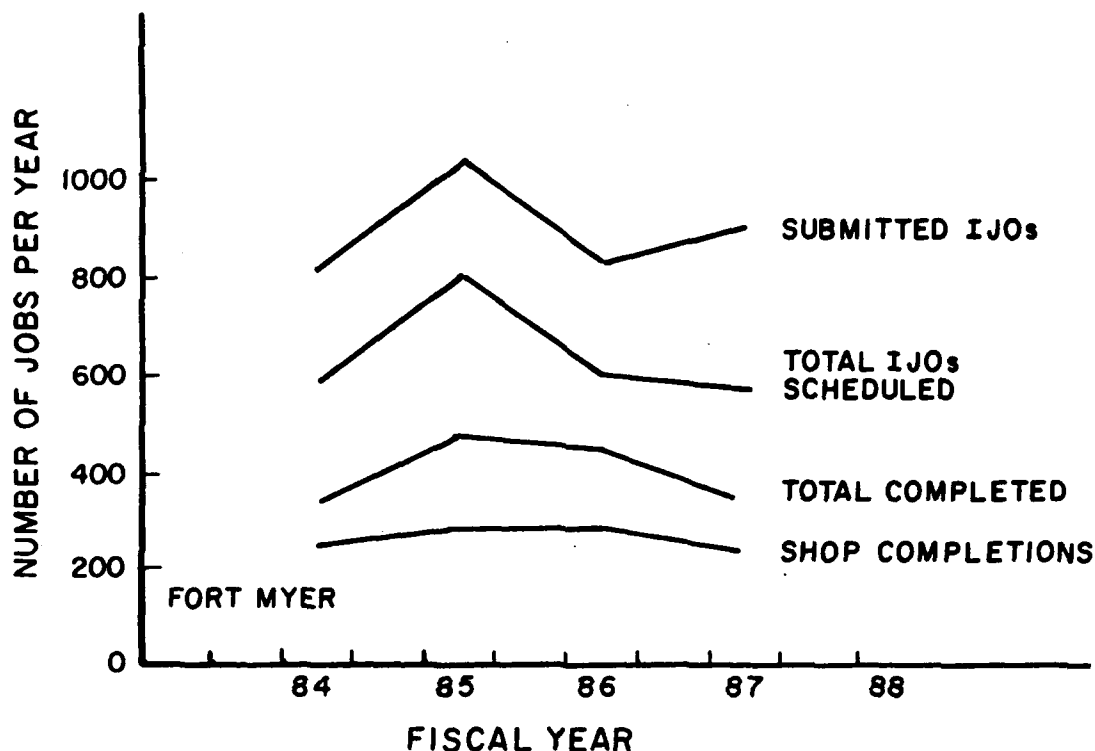


Figure 78. Job processing levels at Fort Myer.

Productivity. The following elements affect productivity:

1. Forms received with insufficient information--when DA Form 2544 is missing the number assigned by the RPMM, job costs cannot be processed or billed accurately, which occasionally produces delays.
2. Minimization of nonproductive shop time--Fort Myer shop personnel have 650 hr logged in FY86 as being assigned to training and shop cleanup; CS and Fort McNair both recorded just under 1000 hr for these nonproductive tasks. Figure 79 shows the nonproductive hours reported by each shop during the third quarter of FY86; also shown is the nonproductive time for each RPMM. These shops are now following the "nonproductive codes" (issued by USAEA,CA) and have improved since FY86.
3. RPMO standards--the RPMO must satisfy many requirements using marginal resources; one measure of shop productivity is the use of the Engineered Performance Standards (EPS). The EPS are used widely by CS (85 percent) and AHS (100 percent) but only to a limited extent at Forts Myer and McNair.
4. Equipment usage for each RPMO is less than 40 percent, as was shown in Figure 77. If some equipment is idle for extended periods of time, equipment sharing could be considered.
5. Supply support--through faster (automated) communications, greater use of warehouse stocks, and the use of expedited purchases, the waiting periods for IJO materials have been reduced by more than 33 percent. Table 30 shows the data for MDW/AHS average delay days for IJO completion between FY84 and FY87.

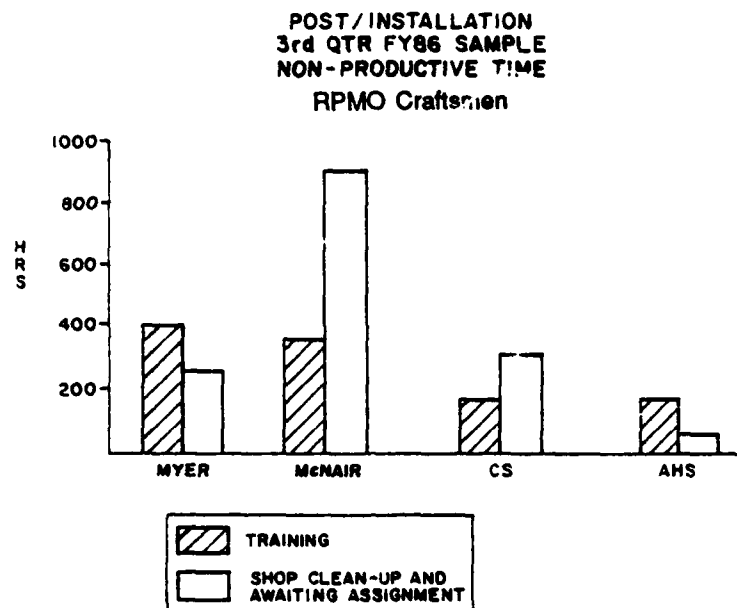


Figure 79. Accumulated nonperformance time for RPMO craftsmen, third quarter FY86.

Table 30
MDW/AHS Delay Days for Completing IJOs Between FY84 and FY87

Installation	1984	1985	1986	1987
Fort Myer	152	121	86	81
Fort McNair	165	87	71	92
Cameron Station	116	110	76	86
Arlington Hall Station	182	134	109	96
Total Average Days	154	113	86	86

RPMO Effectiveness

Service Quality. In the opinion of some customers and the USAEA,CA staff, the quality of service has increased over the past 9 years. The work appears to be better planned, RPMMs are more responsive, and routine projects are being completed on a more timely basis than was perceived in FY81.

Planner/Estimator Successes. The planner/estimator at each RPMO tries to estimate the cost of minor/routine work accurately but is also mindful that an underestimate attracts more attention than an overestimate, since the customer prefers to get money back at the end of a task over being assessed for new funds. Figure 80 reviews the predictions for job time/cost statistics in FY86 as a sample of planner/estimator accuracy. The target is to be within 10 percent of actual. A target miss (overestimate) can be expected from 60 to 80 percent of the time. Fort McNair is the most efficient installation, with a 40 percent success record.

Status Evaluation

Operating Environment

A major contribution of USAEA,CA management to the centralized RPMA has been to foster an operating environment that can offer the benefit of size (more services) while still being sensitive to cost reduction and product improvement opportunities. Management effectiveness has advanced and craft operations consolidated for the five in-house RPMA support organizations incorporated into USAEA,CA.

Improvement in Methods.

Management has provided an economy-minded environment that has encouraged operating achievements such as:

1. A self-initiated streamlining of field procedures, including the consolidation of shops with compatible crafts.
2. Development of operations software to meet RPMA data processing, recordkeeping, and report generation needs, and integration of these packages into a total system.
3. Promotion of an improved balance between the X (repair) and L (new) work in accordance with the needs of each post.
4. Acceptance of additional RPMM responsibilities to reduce the ISE's routine responsibilities and also to simplify the operating process.

Service Quality

USAEA,CA has coordinated with BDE to ensure the current acceptability and continued future improvement in the quality and timeliness of support to the RPMA process.

EA, CA FY 86 SHOP PERFORMANCE

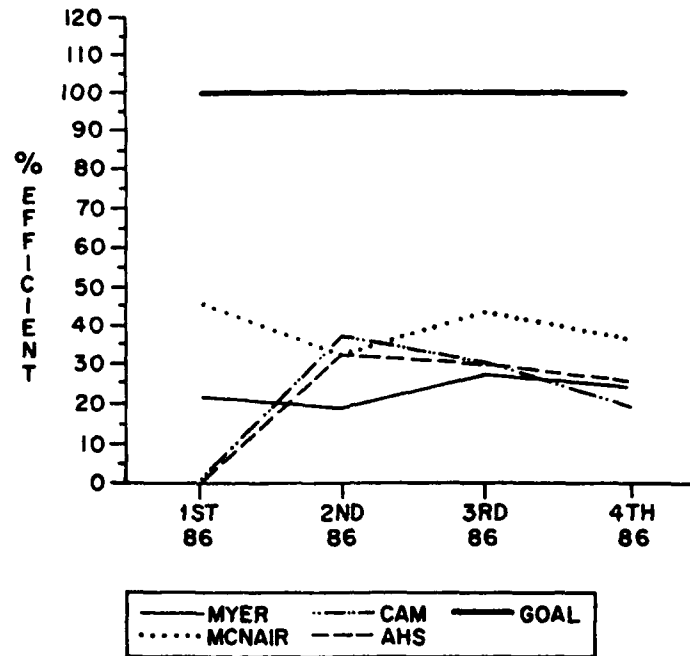


Figure 80. Planner/estimator accuracy in predicting FY86 time/cost job expenditures.

10 SUMMARY AND CONCLUSIONS

USAEA,CA Goals

The first objective of the USAEA,CA test organization was to become an accepted operational agency; this achievement was to be documented through an RPMA consolidation test program to verify that required performance levels are being met under full-scale RPMA operations for each installation or post consolidated. The test is controlled (phased) in that the number and choice of installations consolidated are stepped to the growing capabilities and experience of the test organization; the test is exploratory in that it provides evidence of the advantages and disadvantages of the test organization and the methods it uses.

The USAEA,CA organization has been studied in depth to assess its progress in meeting RPMA consolidation test goals and to identify any additional performance attributes that enhance the RPMA service. The primary purpose of this study was to review IPG planning and USAEA,CA operations to compare planning forecasts by IPG experts with actual needs of a working management. It was found that the experts did very well in forecasting. Areas of prediction uncertainties and planning limitations were identified, as well. Future RPMA consolidation projects may benefit from this information.

The primary benefit of a centralized RPMA organization is its potential for sustained support to both planned and unplanned levels of customer needs. A centralized RPMA inherently has command of a greater depth of resources than is possible with locally maintained RPMA programs. It is the marshalling of this advantage that has provided an opportunity for updating and creating regulations and procedures to improve RPMA operations.

USAEA,CA Status

USAEA,CA completed the Phase I consolidation in FY86, began Phase II in FY87, and is now being evaluated under the Phase II test requirements. The operability of a centralized RPMA in the NCR for Phase I consolidation was demonstrated, and the associated baseline performance areas were accepted. The Phase II baseline has been developed, but FTP performance testing is awaiting implementation of the FFP/ID RPMA contract.

USAEA,CA Performance Verification

The effectiveness of centralized RPMA was measured by the responsiveness and dependability of scheduling, the quality and timeliness in performing needed work, cost-effectiveness, and courtesy and consideration when conducting operations. These measurements were both qualitative (personal surveys and job-site visual inspections) and quantitative (operating performance records). Data from the baseline studies and USAEA,CA operating records were used as indicators to compare performance in FY81 with the current level. This measurement assessment program has verified RPMA performance effectiveness and provided confidence in both the RPMA consolidation concept and the USAEA,CA test organization.

Methods Evaluation

The USAEA,CA test is a comparison between the preconsolidation measurements (indicators) of the baseline study and the centralized RPMA measurements after consolidation. This baseline approach has been widely reviewed and accepted by DA as a valid evaluation method. This study has

determined that the baseline approach should include a weighting of measurement results. Clearly, a more significant system being measured requires a more representative measurement. For example, measurements of RPMA management effectiveness could include the relative importance of this element, interfaces affected, and impact on productivity before generalizing its importance as a performance indicator. Similarly, when productivity is measured, each RPMA job should be identified for the level of effort involved and the degree of urgency (priority), plus any RPMA limitations to supporting this type of job.

Measurement Classes

Table 31 lists the types of performance indicators used in this study. They were chosen for the availability of supporting data and their ability to illuminate key performance areas for the USAEA,CA divisions and branches. The main performance areas were considered to be productivity, response (to routine service order and work requests or to special support needs), and cost-effectiveness.

Productivity is shown in Table 31 as the output (volume) and importance (priority) of the work being done. Meaningful comparison of, say, the volume of work for an RPMA should consider size and complexity/skill requirements of the work done; hence, shop manhours and project expenditures are of interest. The impact of work done also can be considered, as indicated by the customer and the assigned priority.

Responsiveness is depicted in Table 31 for an existing system (fixed constraints), but also one with opportunities for improved coordination and scheduling, processing efficiency, and management control. RPMA work is related to reception desk operations, engineer and design support, and materials/equipment acquisition and supply. The improvements SMD has made in supporting IJOs are evident in the reduced number of delay days.

Internal operating response (i.e., the response of one processing group to another) is part of the above category and also includes procedural developments made possible by resource management and information management support. The levels and reliability of operations in these groups serve as indicators for this type of support.

Cost-effectiveness can relate to the time or money of any services rendered. In Table 31, overhead and shop rates are listed as the costs levied to a customer, which can then be compared with the cost of obtaining the same work from outside services.

USAEA,CA Developmental Success

The USAEA,CA test organization has benefited from the thoroughness of IPG planning, the availability of District support, the skill of the MDW/USAEA,CA workforce, and the guidance of USAEA,CA management. USAEA,CA has successfully developed into a working consolidated RPMA operation using the resources provided.

IPG Planning

The IPG plan developed for USAEA,CA was instrumental in guiding activation, Phase I implementation, and development of a functional organization.

Table 31

Parameters Measured in Assessing USAEA,CA Performance

a. Productivity of ECD, RPMO, SMD, or Procurement:

(1) Work Volume Measurements:

- Size of Jobs:
 - Average dollar level projected
 - Average manhours required
- Quantity of Jobs (Number).

(2) Work Labels:

- Priority (1 to 3)
- Classification (J, K, L, M).

b. Work (Output) Responsiveness:

(1) OMD/RPMO reception desk operations:

- SO/IJO receipt, verifications, and log-in time
- SO/IJO documentation preparation/transmittal time.

(2) RPMO/ECD/BDE implementation of WO design/performance or decision to use another processing route:

- IJO design time
- IJO contracting/scheduling time
- IJO shop/contractor performance time vs. assigned priority.

(3) Materials/equipment supply operations:

- IJO average delay days
- IJO delay days distribution.

c. Support (Internal Operations) Responsiveness:

(1) Resource Management:

- IE study requests
- Facility status documentation
- Financial Management (Revolving Fund refurbishment record).

(2) Information Management:

- ADP support:
 - Downtime record
 - Utilization (CPU time summaries).

d. Cost-Effectiveness:

(1) Overhead

(2) Shop rates.

Operating Environment. An important contribution of the IPG was to organize management and develop procedures that provided a goal-oriented, economy-minded environment. This environment has included:

1. Online ADP support and procedures that have achieved an integrated operations approach unique within USACE.
2. A search for cost reduction and performance improvement opportunities in RPMA by operating/administrative personnel at all levels (e.g., the self-initiated streamlining of field procedures by the RPMs, including consolidation of some shops with compatible crafts).
3. Acquisition and management of resources to solve major problems and complete special tasks.

USAEA,CA Activation. The simultaneous startup (activation) and Phase Ia consolidation of USAEA,CA would have been very difficult without experienced personnel. The MDW transfers to USAEA,CA allowed for startup with minimal disruptions in RPMA services.

Phase I Implementation. Understandably, the IPG relied heavily on installation DEH experience for structuring USAEA,CA to handle the Phase I consolidation; however, not all of the information received was optimal for an in-house centralized RPMA type of operation. While adjustments to IPG plan were to be expected, the overall IPG success rate was high. The IPG-developed organizational structure was changed, but it initially worked as planned. Especially accurate were the IPG predictions of needed supply and procurement levels, and the corresponding warehouse space requirements.

USAEA,CA Management

Early USAEA,CA management advanced and adapted IPG planning to the needs and operating environment of the actual Phase I test organization. Functional improvements applied by USAEA,CA management include:

RPMA Workload Management. The in-house RPMA workload is measured by the SO and IJO support provided. In-house SOs have been supported throughout Phase I operations at just above 20,000 per year with an on-time record of around 70 percent. In-house IJO productivity has remained at around 800 per year for 3 years but is at an improved performance rate due to upgraded RPMO and Supply Branch operations.

Supply Support. Consistent improvements in warehouse procedures have decreased zero-balance line items, improved stock listings, and increased storage efficiency. Notably, IJO delay time due to materials acquisition has declined 40 percent, while warehouse space has been reduced by more than 50 percent since FY81.

Financial Control. Strong financial controls make the USAEA,CA concept workable. An orderly project handling procedure at fiscal year closeout and closely monitored Revolving Fund accounting practices are now in place.

Value of Output. Although the quality of RPMA work has improved steadily since the Phase I consolidation in FY81, it is performed at a current average shop rate of \$32/hr. This rate has increased slightly over previous years (in constant dollars), but is considerably less than comparable services provided by local industry in the NCR.

Baltimore District Support

USAEA,CA-dedicated sections of the BDE work cooperatively with USAEA,CA divisions to improve procedures for procurement, contracting, contract management, and engineering. Thus, BDE has contributed strongly to the value, timeliness, and cost-effectiveness of USAEA,CA output.

Effectiveness of USAEA,CA

USAEA,CA's organizational effectiveness is apparent from the basic functional capabilities demonstrated and the operational efficiency measured after each consolidation.

Functional Capabilities

The USAEA,CA operating effectiveness has depended on the functional capabilities of the organization. These capabilities are demonstrated in all operating areas and are independent of the consolidations being tested. They were advanced when: integrated ADP support was developed to automate RPMA, cooperation with SMD reduced IJO delay time, and shop efficiency improved through streamlining.

ADP Support. The ADP service provided for USAEA,CA has supported a 65 percent increase in transactions and a fourfold increase in user access time. At the same time, the allocated ADP support cost has been reduced to one-third the cost planned by the IPG in FY80.

Financial Management. Methods for determining and assigning charges to recover customer expenses have improved. Revolving Fund operations have stabilized, and project carryover procedures have been established.

Procurement and Supply. To support in-house RPMA requirements, SMD consistently improved its procedures after each Phase I consolidation. Availability of stock improved from the serious deficiencies of FY83 to a controlled status in FY85, and then to the present well managed state that has been in effect since FY86. SMD has reduced IJO delay time for materials by up to 50 percent while reducing warehouse space by more than 50 percent since FY81.

RPMO Development. The RPMO/RPMO has maintained responsive RPMA support at a shop rate well below comparable services from local industry.

Organizational Effectiveness

USAEA,CA's effectiveness at the division level was determined from the completed Phase I and the in-progress Phase II consolidation test operations.

Phase I. Test measurements for Phase I consolidations follow the performance indicators in Table 31; USAEA,CA organizational performance was determined from these measurements as described below.

HQ Administration and Fund Control

Resource Management Division--RMD has successfully supported the Revolving Fund procedures and made them work to the benefit of USAEA,CA. In addition, RMD has instituted an orderly year-end process that provides for screening of carryover projects to determine their continued need and the reactivation of corresponding Revolving Fund accounts.

Information Management Office--ADP systems have become more reliable and online usage has expanded; IMO developments are having increasing impact on USAEA,CA operations. Cost per CPU time unit has declined by 50 percent since FY82.

Engineering and Operations Support

Engineering and Construction Division--ECD has improved its functional interface with BDE to enable quick determination of the best available design route on projects less than \$25K.

Operations and Maintenance Division--OMD has operated the Service Order Desk under an increasing workload with a decreasing number of errors. OMD also has improvised special support actions for Army elements and has researched industry for competitive energy sources and better control over all utility costs.

Supply Management Division--SMD was reorganized into an integrated supply service, with many procedures automated. Warehouse space usage and stock management were optimized, contributing to faster response times for IJOs. As mentioned above, stock-on-call status has improved dramatically.

District Procurement and Contracting Service (CENAB-CT-E)--Better procurement has improved RPMA performance (e.g., a 40 percent reduction in IJO delay days for materials).

Phase II. The Fort Belvoir data for Phase II are still under study. When the contracting method to be applied at Fort Belvoir is determined and the criteria for successful operations are established, it will be possible to test the effectiveness of USAEA,CA in this large operation. However, it appears that no delay is necessary for identifying the value of USAEA,CA support to the CA contracting operations at Fort Belvoir. This service facilitated development of the FFP/ID requirements, which will allow effective RPMA contracting to be implemented in FY90.

Special Attributes

Responsiveness to Unscheduled Events. USAEA,CA has the flexibility to respond to major unforeseen events and to meet unscheduled demands; an example is the interim inhouse RPMA support to VHFS after withdrawal of a major CA contractor.

USAEA,CA also has provided the following assistance to other NCR agencies:

- Contracting needed repairs at an off-installation site (Arlington National Cemetery)
- Refurbishments to the Soldier's and Airman's Home
- Control and management of a pest infestation at Henderson Hall (USAMC).

Services as a New Technical Resource. USAEA,CA has become a new technical resource within the NCR. Assistance has been requested and USAEA,CA has responded successfully to:

- Cross-service usage studies for the Joint Interservice Regional Services Group
- Energy conservation surveys and studies
- Hazardous materials assessment of and removal from old structures (e.g., asbestos)

- Pest control and management
- Utilities and energy systems management
- Comprehensive land management
- Facility/component inspection methods.

Conclusions

The general conclusions of this report relate to the RPMA consolidation organization's development, successful operation, and areas in which operational or procedural improvements can be applied.

Developmental Improvements

Preplanning. Early Steering Committee formation would permit a well planned IPG recruitment and a head start on engineering activity scope studies.

IPG Startup. A Steering Committee representative on the IPG would ensure that Command wishes are met and that IPG is fully supported; an IPG Deputy Director would ensure that productivity is achieved early.

Personnel Issues. If space allocation and transfer of responsibilities can be resolved during the preplanning or planning stage, the IPG could have input and, in addition, needless personnel trauma could be replaced with reassurance and motivating statements of direction.

Potential Applications

USACE Participation. The USAEA,CA experience has demonstrated the feasibility of an expanded role for USACE in the cycle of real property O&M. Including USAEA,CA-type organizations under USACE may result in a stronger advocacy for RPMA needs at the installations.

Emergency Resource. A consolidated engineer activity has the potential to serve as a resource pool for providing emergency and unplanned support to Government facilities outside the consolidated organization.

Role Model. USAEA,CA is a verified service unique within USACE and could serve as a model for future applications of this concept.

Future Applications

The findings of this study can be used to develop a philosophy and a plan for future consolidations. Complications during USAEA,CA development have resulted in some improvisation, yet from these experiences, better procedures and improved services have evolved.

Future decisions to create a USAEA,CA-type organization should be based on careful consideration of the project objectives, the compatibility between consolidation objectives and the installation mission, and favorability of the local climate for supporting such a project. A centralized

RPMA organization may not be practical or cost-effective in all regions; for this reason, the need to perform meticulous feasibility studies cannot be overemphasized. In cases where organizational and geographical environments are appropriate, RPMA consolidation should be considered.

The USAEA,CA experience can also be of value to decentralized RPMA services. The procedures, methods, and software packages developed for USAEA,CA could be adapted to other types of RPMA management and to other M&R tasks or facility rehabilitation projects.

REFERENCES

- Army Regulation (AR) 5-3, *Installation Management and Organization* (Headquarters, Department of the Army [HQDA], 10 November 1986).
- AR 25-1, *The Army Information Resources Management Program* (HQDA, 18 November 1988).
- AR 380-380, *Automation Security* (HQDA, 8 March 1985).
- AR 420-41, *Utilities Contracts* (HQDA, 1 October 1982).
- AR 623-105, *Officer Evaluation Reporting System* (HQDA, 15 November 1981).
- Blackmon, R., *RPMA Consolidation Activities in the National Capital Region, Vol I: Main Report*, Technical Report P-156/ADA142150 (U.S. Army Construction Engineering Research Laboratory [USACERL], May 1984).
- Department of the Army Pamphlet (DA Pam) 570-551, *Staffing Guide for U.S. Army Garrisons* (HQDA, 21 January 1972).
- Department of Defense (DOD) Manual 4145.19-R-1, *Storage and Warehousing Facilities and Services* (13 August 1975).
- Doing Business With the Federal Government: Principles and Procedures of Government Procurement* (General Services Administration, July 1983).
- Facilities Engineer Job Estimating (FEJE) System Description* (FESA, October 1982).
- Facilities Engineering Supply System (FESS) Reports Manual* (Facilities Engineering Support Agency [FESA], June 1985).
- Futures User's Manual* (CENAB, November 1986).
- Installation Staff Engineer Handbook*, Draft (USAEA,CA, undated).
- Letter to: CDR, USAMDW; From: LTC Ernest D. Pioxotto, U.S. Army Comptroller; Subject: Suspension of CA During USAEA,CA Consolidation Test (10 February 1983).
- Letter to: HQDA (DAEN-DSE); From: COL James L. Trayers, Jr.; Subject: Upgrade of USAEA,CA ADP Equipment (23 February 1982).
- Memorandum for Engineer Studies Center, from DAEN-FEZ-B, *Consolidation of Real Property Maintenance Activities (RPMA) at Army Installations in the Washington, DC Area* (19 January 1978).
- Memorandum for the Vice Chief of Staff, Army, *RPMA Centralization and Consolidation in the National Capital Region (NCR)-Decision Memo* (18 December 1977).
- Memorandum from the Assistant Secretary of Defense for Installations and Logistics (ASD[I&L]), *Consolidation of Real Property Maintenance Activities (RPMA) at Installations in the WDC Area* (4 April 1977).

Memorandum of Understanding, HQUSEC and Fort Belvoir (TRADOC) and USAEA,CA/USAMDW, *RPMA Support Relationships at Fort Belvoir DEH* (23 September 1986).

Office of Management and Budget (OMB) Circular A-76, *Performance of Command Activities* (4 August 1983).

Operating Instructions for Adding and Maintaining Records in LEADGOLD (USAEA,CA, 13 May 1987).

Operating Instructions for Entering and Maintaining SF 52 Tracking System Records (CENAC, May 1987).

Organization, Mission and Functions [for] USAEA,CA, 4th revision (U.S. Army Engineer Activity, Capital Area [USAEA,CA], 17 March 1988).

Purnell, T., and S. Tarr, *A Report on Reconstituting an In-House Workforce From a Predominantly Contract Workforce at the RPMO, Vint Hill Farms Station, Warrentown, VA* (USAEA,CA, May 1984).

RPMA Centralization and Consolidation in the NCR, Lessons Learned Report (Pan Am World Services, Inc., March 1984).

Shahin, M. Y., M. I. Darter, and S.D. Kohn, *Development of a Pavement Maintenance Management System*, Technical Report C-76/ADA048884 (USACERL, November 1976).

Siegel, G. W., and W. A. Miller, *Subtest Report: IFS/Interface/COEMIS Automated System* (undated).

Staff Engineers PROJECTS Management System (CENAC, August 1987).

WONDERS User Manual (CENAC, May 1984).

APPENDIX A:

PART I: INDEX OF EXHIBITS & SUPPORTING DOCUMENTATION FOR USAEA,CA CONSOLIDATION OF RPMA IN THE NCR

A. DIRECTIVES:

1. **MEMORANDUM FOR Assistant Secretaries of the Army, Navy, and Air Force (I&L) (4 APR 1977):**
Consolidation of RPMA at Military Installations in the Washington D.C. Area.
2. **Memorandum thru Deputy Chief of Engineers For ESC (19 JAN 1979):**
Request for Engineer Studies Center (ESC) to conduct an EA,CA analysis.
3. **Memorandum thru Chief of Staff, Army; Asst Secretary of Army (IL&FM), For Deputy Asst.Secretary of Defense (I&H) (20 NOV.1979):**
Consolidation of RPMA at MIL Inst. in the WDC Area --
DECISION MEMORANDUM.
4. **Memorandum thru Major General Arter CMDR, MDW, Fort McNair, WDC (7 MAY 1980):**
RPMA Centralization & Consolidation in the NCR.
(To formalize an understanding between USACE and MDW for the transfer of functions and resources.)
5. **DACA-RMC TO MDW CMDR (10 FEB 1983):**
Suspension of CA (Studies) during EA,CA (PHASE I) Consolidation Test.
6. **Key letters establishing USAMSSA automation/computer support to USAEA,CA (JUL & AUG 1980).**
7. **DACS-DMC TO: CMDR.S TRADOC/USACE/MDW (8 MAY 1986):**
RPMA Centralization & Consolidation in the NCR.
(Implementation of Phase II Consolidation of Fort Belvoir on 1 October 1986.)

B. MEMORANDUMS OF UNDERSTANDING (MOU'S) BETWEEN:

1. IPG Chairman & CMDR. FESA (27 FEB 1980):
FESA Systems support to Capital Region Consolidation (IPG membership).
2. CMDR. USAEA,CA & CMDR. BDE (17 JAN 1985):
Transfer and acceptance of completed constr. projects.
3. CMDR.USAEA,CA & CMDR.BDE (25 OCT 1985):
Authority and responsibility of the Contracting Officer Representative (COR).
4. INSCOM & USACE/USAMDW, Proposed Reissue (24 SEP 1985):
RPMA Support Relationships at AHS and VHFS.
5. HQ, USAEC AND FORT BELVOIR & EA,CA/MDW (29 APRIL 1986):
FTB Master Planning and Space Management Program Relationships with EA,CA/MDW.
6. SAME (23 SEP 1986).

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C. USAEA,CA ORGANIZATION & IMPLEMENTATION MEMO'S:

1. MEMORANDUM FOR: CHIEF OF STAFF, MDW (INFO) (12 FEB 1979):
RPMA Consolidation (dev. options for further study).
2. MEMORANDUM FOR COMMANDERS, MDW, DARCOM, TRADOC, HSC, INSCOM from CHIEF OF ENGINEERS, WDC (9 NOV 1979):
RPMA Centralization and Consolidation in the NCR (fixing key committee dates and NCR-RPMA responsibilities).
3. LETTER, COL J.L. TRAYERS, JR. TO HQDA DAEN-RM (7 MAY 1980):
Evaluation of EA,CA Org. Requirements (manpower).
4. LETTER DAPE-MBA TO DAEN-RMU-R (23 NOV 1981):
Incorporation of AHS into USAEA,CA for RPMA support.
5. LETTER NACSA TO DAEN-RMM-C (9 DEC 1982):
Revised CPAS (now CA) for RPMA at (MDW Posts).
6. LETTER COL Trayers to SC Meeting Attendees (18 Oct 1982):
Consolidation of RPMA in NCR.
7. LETTER MAG J. N. ELLIS, COMMANDING, TO MAG J. B. BLOUNT (13 DEC 1982): Phase II consolidation of Fort Belvoir.
8. LETTER, MAG A. N. STUBBLEBINE III, USA COMMANDING, TO MAG W.R. WRAY, DEPUTY COMMANDER, USACE, WDC (11 MAR 1982):
RPMA Centralization in the NCR (transfer of INSCOM spaces).
9. LETTER, EA,CA TO HQDA (DAEN-RMZ) WDC (29 MAY 1986):
Incorporation of FTB DEH into USAEA,CA for RPMA Support.

D. RESPONSIBILITIES AND PROCEDURES:

1. RMD (EA,CA) DF (7 APR 1982):
EA,CA Functional Document (Final Review Version).
2. USAMDW Paper (NOV 1982): FE SOP for Special Work Performed
on a Reimbursable Basis.
3. BDE (E.L.Hamm) Report (undated):
"RPMO Management SOP for the RPMA at VHFS".
4. USAEA,CA DF (9 APR 1987):
SOP for Processing of RPMA CA Contract Modifications
5. USACE DRAFT DOCUMENT (15 MAR 1988):
"Organization, Mission, and Functions, EA,CA".

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E. RESTRUCTURING/REORGANIZATION DOCUMENTATION:

1. USAEA,CA DF (8 JULY 1983): "Implementation Plan for
Decentralization of the WORK COORDINATION FUNCTION".
2. USAEA,CA REPORT (MAY 1984): "Report on Reconstituting an In-
House Workforce at RPMO of VHFS".
3. USAEA,CA Paper (Jan.1988):
AHS Transition Update...

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F. USAEA,CA BRIEFINGS, FACT SHEETS & WORK PAPERS:

1. Background/History US Army Engineer Activity, Capital Area
(FY 1981).
2. FY83 - BASELINE (RPMA) PERFORMANCE INDICATORS (FY 1984).
3. EA,CA (PHASE II) BASELINE STUDY (FY 1985)
4. MINI-STEERING COMMITTEE BRIEFING (7 FEB 1986).
5. TASK SCHEDULE FOR IMPLEMENTATION OF FORT BELVOIR
RPMA FUNCTIONS INTO USAEA,CA (OCT 1986 ?).
6. EA,CA/DEH CONSOLIDATION CHALLENGES (FY 87).
7. FORT BELVOIR EARLY TRANSFER CRITERIA (FY 88 ?).

APPENDIX A:

**PART II: INDEX OF REFERENCE REPORTS AND PUBLICATIONS SUPPORTING
THE USAEA,CA CONSOLIDATION OF RPMA IN THE NCR**

A. OPERATING INSTRUCTIONS, REPORTS AND MANUALS:

1. LETTER, ATEN-RI TO CMDRS TRADOC INSTALLATIONS (1 DEC 1981):
Revised Letter of Instructions (LOI) for Organizing and
Operating a Directorate of Facilities Engineering (DFE)
Under a Predominantly Contract Mode.
2. Huntsville District Lessons Learned Report (MAR 1984):
"RPMA C&C in the NCR, Lessons Learned Report".
3. DRAFT EA,CA REPORT (UNDATED):
"USAEA,CA Guidance for Operating Under A Predominantly
CONTRACT MODE".
4. BDE DOCUMENT (UNDATED):
"Operations and Work Management Manual".
5. EA,CA DF (29 JUN 1987):
FY 87/88 Transition Procedures.

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B. PERFORMANCE PROJECTIONS:

1. Huntsville Division Report No. HNDSP-84-091-SDSE (AUG 1984):
"NCR FE Consolidation Test, Projection of Impact
of (the) Consolidation of Fort Belvoir", Chapter 5.
2. CENAC-SA Information Paper (24 October 1986):
Fort Belvoir (Contracting).
3. Huntsville Division (E.L.Hamm & Assoc.)
First Draft Report (August 1987):
Second Draft Report (October 1987):
"Fort Belvoir FY 86 Baseline Study, NCR FE
Consolidation Test".

C. PERFORMANCE ANALYSIS STUDIES:

1. E.L. Hamm & Assoc., Inc. (undated):
"Study of USAEA,CA Supply Management Division".
 2. E.L.Hamm & Assoc. Study (Appendix 1, undated):
"Lessons Learned, CA Review (for) DEH, Fort Belvoir,VA.
 3. USACE FE Support Agency Report S-12 (OCT 1982):
"Lessons Learned in Contracting RPMA"
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D. DATA ASSESSMENT STUDIES:

1. Resource Consultants Inc. (RCI) Evaluation Reports:

Section 1.	General
Section 2.	MDW Analysis.
Section 3.	Concept.
Section 4.	Proposed Organization.
Section 5.	Analysis of Impact.
Section 6.	Residual Staff Analysis.
Section 7.	COR Staff Analysis.
 2. RMD Quarterly Reports, FY 83 to FY 87.
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E. ADP OPERATING & DEVELOPMENT REFERENCES:

1. FESA Systems Div, Fort Belvoir, VA (OCTOBER 1982):
FE Job Estimating (FEJE) System Description.
2. OCE Information Systems Plan for OCE (June 1984):
"Information for Decision".
3. USAEA,CA Drafts of ADP User Manual Sets (FY 85 to FY 87).
 - a. Section H "ADP Systems" (general)>
 - b. FEMS Cost Processing/Equipment Management in the BASOPS Environment, IFS USER'S MANUAL Vol.IIIB.
 - c. FESS Reports Manual, June 1985.
 - d. PROJECTS User's Manual, NACAS TB 20-1 (5/14/87).
 - e. FUTURE System Reference Manual.
 - f. Leadgold User,s Manual.
 - g. WONDERS USER'S MANUAL

APPENDIX A:**PART III: INDEX OF IPG STUDIES LIBRARY****NCR FE CONSOLIDATION STUDIES INDEX****By Month and Year of Publication**

<u>Volume No.</u>	<u>Study Title</u>	<u>Publication Date</u>	<u>Study Originator</u>	<u>Remarks</u>
1.	NCR FE Consolidation Study, MDW, FY79 Evaluation	Jul 81	HND	Draft
2.	Comparison Methodology for Evaluating FE Consolidation in the NCR	Feb 82	CERL	Draft
2a.	Comparison Methodology for Evaluation of FE Consolidation in the NCR	Mar 82	HND	Draft
3.	NCR FE Consolidation Study, MDW, FY79 Evaluation	Mar 82	CERL	Tech Report
4.	NCR FE Consolidation Study VHFS & AHS: FY79 Evaluation	Mar 82	CERL	Tech Report
5.	NCR FE Consolidation Study, WRAMC, FY79 Evaluation	Apr 82	HND	Tech Report
6.	NCR FE Consolidation Study,	Apr 82	HND	Draft
7.	NCR FE Consolidation, MDW Services Requirement Resurvey	Apr 82	CERL	Survey
8.	NCR FE Consolidation Study, Fort Belvoir, FY79 Evaluation	May 82	HND	Draft
9.	NCR FE Consolidation Test VHFS, FY81 Evaluation	Sep 82	HND	Draft
10.	NCR FE Consolidation Study, EA,CA Interim Post Consolidation Study	Sep 82	HND	Draft
11.	NCR FE Consolidation Study, Phase 1, Post Consolidation Comparison FY82	Dec 82	PAN AM	Summary Report

<u>Volume No.</u>	<u>Study Title</u>	<u>Publication Date</u>	<u>Study Originator</u>	<u>Remarks</u>
12.	RPMA Evaluation Comparison Study Briefing	May 83	HND	Briefing I
13.	NCR Post consolidation Comparison, Phase 1, FY82	Jun 83	PAN AM	Reference Report
14.	NCR FE Consolidation Test, Fort Belvoir, FY82, Evaluation Study	Jun 83	HND	Tech Report
15.	NCR FE Consolidation Study, VHFS, FY81, Baseline	Jun 83	HND	Final Report
16.	Comparison Methodology for Evaluation for FE Consolidation in the NCR, Supplement 1	Jul 83	PAN AM	Supplement
17.	NCR FE Consolidation Study, VHFS, FY81, Baseline	Aug 83	HND	Final Report
18.	NCR FE Consolidation Study, VHFS, FY79, Evaluation	Aug 83	HND	Final Report
19.	NCR FE Consolidation Study, Fort Belvoir, FY82, Baseline Study	Sep 83	PAN AM	Reference Report
20.	NCR FE Consolidation Study, Fort Belvoir, FY83, Baseline Study	Sep 83	PAN AM	Second Draft
21.	NCR FE Consolidation Study, MDW, FY79, Baseline	Nov 83	HND	Final Report
22.	NCR Post Consolidation Comparison, Phase 1, FY83	Jan 84	PAN AM	First Draft
23.	Preliminary Briefing, EA,CA & Fort Belvoir Consolidation Impact	Feb 84	PAN AM	Preliminary Report
24.	Fort Belvoir, FY83, Baseline Selected Tables	Feb 84	PAN AM	Selected Tables
25.	Preliminary Results, EA,CA, FY82 & 83, Consolidation Impact	Feb 84	PAN AM	Preliminary Results
26.	NCR FE Consolidation, Results of Test Indicators FY82 & 83	Feb 84	PAN AM	Test Indicators

<u>Volume No.</u>	<u>Study Title</u>	<u>Publication Date</u>	<u>Study Originator</u>	<u>Remarks</u>
27.	Fort Belvoir, FE Consolidation, Results of Test Indicators FY82 & 83	Feb 84	PAN AM	Test Indicators
28.	NCR FE Consolidation Study, Results of Test Indicators as of FY83	Mar 84	PAN AM	Test Indicators
29.	NCR Post Consolidation Comparison, Phase 1, FY83 vs Baseline	Mar 84	PAN AM	Second Draft
30.	NCR Post Consolidation Comparison, Phase 1, FY83 After Study	Mar 84	PAN AM	Second Draft
31.	NCR Post Consolidation Comparison Phase 1, FY82 vs FY83 EA,CA Results	Apr 84	HND	Final Report
32.	RPMA Consolidation Activities in the NCR, Vol I: Main Report	May 84	CERL	Tech Report
33.	RPMA Consolidation Activities in the NCR, Vol II	May 84	CERL	Tech Report
34.	RPMA Consolidation Activities in the NCR, Vol III	May 84	CERL	Tech Report
35.	RPMA Consolidation Activities in the NCR, Vol IV	May 84	CERL	Tech Report
36.	Data Collection Process Req'd for Evaluation of FE Consolidation	Jun 84	HND	Final Report
37.	NCR FE Consolidation Test Fort Belvoir, FY82, Baseline Study	Jun 84	HND	Final Report
38.	NCR Post Consolidation Comparison, Phase 1, FY83 After Study	Jul 84	HND	Final Report
39.	NCR FE Consolidation Test	Aug 84	HND	Draft
40.	NCR FE Consolidation Test Fort Belvoir, FY83, Baseline Study	Nov 84	HND	Final Report

APPENDIX B:

STANDARD SYSTEMS

IFS - an upward reporting system that also was intended to meet local needs; it was designed as a "standard" Army automated system for managing FE data, processing operations and maintenance data, and supporting FE work management (i.e., planning, budgeting, execution and review cycles of real property management). At USAEA,CA, the system was aimed at increasing the productivity of the RPMM workforce so that the maximum return would be obtained from engineer resources used in accomplishing the RPMA mission for NCR.

RCAS - for conducting an effective operations test of the Phase I consolidation RPMA in the NCR, IFS data input mechanisms were upgraded. The result was the development of the IFS/INTERFACE/COEMIS Automated System (IICAS).

The Installation Finance and Accounting Branch of USAEA,CA needed an interface system for IFS to allow single entries of data so as to simplify the billing process. IICAS allowed job cost and civilian labor hours data to be extracted from IFS on a periodic basis and to be summarized to a level appropriate for an individual DA Form 2544. (An overhead cost per hour also was applied/charged to work documents based on the actual civilian direct labor hours used.)

COSMIC - a system composed of several modules developed in-house for USAEA,CA. Table B1 summarizes the COSMIC modules.

Table B1
COSMIC Modules and Their Functions

Expenses

1. FESS: Facilities Engineer Supply System is central to supply and procurement procedures, tracking information related to procurement, shop stock, warehouse accounting, materials ordering, and inventory/PBA records.
2. LEADGOLD: Labor and Equipment Actual Data/Good Old Labor Data is a set of programs used to store labor and equipment costs for each job performed by USAEA,CA.
3. CONTRACTS: Contract status tracking.

Accounting

1. FUTURE: Funds Transferred with online date, Retrieve and Entry is a system for electronic transfer of engineering design and construction funds between USAEA,CA and Baltimore, with distribution to appropriate projects.
2. BILL: Each customer bill and the transaction inputs for the COEMIS/STANFINS link are generated by this program.

Production

1. FEJE: Facilities Engineer Job Estimate program is used to develop cost estimates for Work Orders and to exchange information with the WONDERS Program; FEJE replaces the 15 Engineered Performance Standards (EPS) handbooks plus all of the Unit Price Standards.
2. WONDERS: Work Order Newfangled Distributed Entry and Real-Time System processes both Work Order and Service Order log-in, status, and cost data records.
4. PROJECTS: A project management file program used by USAEA,CA to monitor OMA projects (of over \$10,000 construction cost) through the programming, design (in-house or by an A/E firm), and construction phases.

Resources

1. FACILITIES: A facilities index containing status and location information.
2. ADMIN: The Administrative Services System tracks all USAEA,CA employees and positions for the current fiscal year.
3. TABLES: An input method for administrative and FE tabular data.
4. UNIQUES:
5. ASSETS:

APPENDIX C:

EXAMPLE CUMULATIVE IN-HOUSE 1057 REPORT

CENAB-CT-E

EACA
MANAGERIAL DATA OVER/UNDER \$25,000
MANPOWER/WORKLOAD

SEPTEMBER 1987
MONTHLY

BUYER	ACTIONS	DOLLARS	L1
EACA PROC SPPT BR/BALTO			
ADAMS	27	\$8,554,574	184
SPEARS	22	\$5,379,665	36
STURANDANT	18	\$6,557,423	91
WHEELER	16	\$8,166,445	16
*PENNINGTON	3	\$133,700	3
*PENNINGTON - helping Temporality			
TOTALS	86	\$28,791,807	330

EACA/CAMERON STA/SERVICES

FRILOUX	33	\$288,098	34
BROWN	34	\$274,700	34
THOMAS	28	\$222,426	74

EACA/CAMERON STA/SUPPLY

BABER	0	\$0	0
CHYZ	78	\$71,561	280
CUNNINGHAM	0	\$0	0
WESTERMAN	65	\$46,237	230
PETROSINO	80	\$80,646	236
TOTALS	399	\$1,143,796	1116

EACA/FT. BELVOIR

SOHANEY	0	\$0	0
FAST	38	\$962,873	263
FILLO	28	\$942,132	28
ADAMS	2	\$1,952,363	28
TOTALS	68	\$3,873,398	334

BALTO EACA SUPPORT + CAMERON STA + BELVOIR

GRAND TOTALS	554	\$33,809,001	1780
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CENAB-CT - E

EACA
MANAGERIAL DATA OVER/UNDER \$25,000
MANPOWER/WORKLOAD

SEPTEMBER 1987
CUMULATIVE

BUYER	ACTIONS	DOLLARS	LI
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EACA PROC SPPT BR/BALTO

ADAMS	30	\$9,214,902	256
SPEARS	22	\$5,379,665	36
STURANDANT	18	\$6,557,423	91
WHEELER	26	\$10,795,565	76
*MISC	1	\$104,738	1

*MISC - BUYERS THAT HAVE LEFT/TRANSFERRED

TOTALS	111	\$33,164,719	514
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EACA/CAMERON STA/SERVICES

FRILOUX	367	\$873,136	374
BROWN	385	\$1,563,956	388
THOMAS	225	\$2,218,979	470
*MISC	278	\$474,025	173

*MISC: BUYERS THAT HAVE LEFT/TRANSFERRED

EACA/CAMERON STA/SUPPLY

BABER	734	\$859,892	3675
CHYZ	656	\$619,996	2824
CUNNINGHAM	75	\$83,754	271
WESTERMAN	876	\$599,905	3261
PETROSINO	535	\$452,659	2069
*MISC	983	\$1,166,891	983

*MISC: BUYER THAT HAVE LEFT/TRANSFERRED

TOTALS	5205	\$9,081,907	18192
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EACA/FT.BELVOIR

TOTALS	252	\$8,556,786	614
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BALTO EACA SUPPORT + CAMERON STA + BELVOIR

FY87 GRAND TOTALS	5568	\$50,803,412	19320
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APPENDIX D:

PART I: PHASE I PURCHASING PROCEDURES

Small Purchases Less Than \$10,000 (Services) GSA-FSS Purchases Greater Than \$10,000.

1. The using activity initiates the request for services.
2. The O&M Division prepares an estimate, a Statement of Work describing the needed services, and a DA Form 3953 (Purchase Request and Commitment). Documentation is returned to the requestor for review confirmation (Step 2A in Figure H2).
3. The FMB certifies the availability of funds.
4. The MDW Procurement Branch processes the request and submits it to the appropriate contractors for quotations. Contractors prepare their quotations and submit them to the MDW Procurement Branch. The MDW Procurement Branch evaluates the quotations and awards the contract on DD Form 1155 (Order for Supplies or Services/Request for Quotations) and distributes the Purchase Order (Steps 4a, 4b and 4c in Figure H2). The FMB makes the needed distribution within the USAEA,CA.
5. The contractor performs the required services.
6. The using activity receives the needed services.
7. The Real Property Maintenance Manager (RPM) inspects the work and provides on-site coordination with the contractor.
8. The contractor submits an invoice for payment to the District F&A Branch and provides a copy to the RPM.
9. The RPM authenticates the services received on DD Form 1155 or on the invoice and forwards it to the FMB with a copy furnished to the MDW Procurement Branch.
10. The FMB reviews the authenticated DD Form 1155/invoice and forwards it to the District F&A Branch.
11. The District F&A Branch reviews the authenticated forms, makes payment and distributes copies to the MDW Procurement Branch to close its file, and to the FMB for the USAEA,CA copies.
12. The contractor receives the payment to complete all contract activities.

Construction Projects Less Than \$10,000

1. The using service initiates the request on DA Form 4283 (Facilities Engineering Work Request) and submits it to the O&M Division.
2. If contracting out the work appears to be the best alternative to accomplish the work, the O&M Division Processes the report and forwards it to the Programs Branch.
3. The Programs Branch reviews the request and recommends a course of action to the Director. The Director approves the request and returns it to the Programs Branch.

4. The Programs Branch initiates a DA Form 4285 (Engineer Design Format) and forwards it with the DA Form 4283 to the Plans Branch. The Plans Branch accomplishes any needed design, prepares a cost estimate and DA Form 2544 (Intra-Army Order for Reimbursable Services), and completes the DD Form 4285. The DA Form is given to the user for approval. The user approves the DA Form 2544 authorizing work to begin and returns it to the Plans Branch. The Plans Branch prepares DA Form 3953 (Purchase Request and Commitment) and DA Form 4286 (Facilities Engineering Contract Data), and forwards the DA Form 3953 to the FMB.

5. The FMB certifies the availability of funds on the DA Form 3953 and returns it to the Plans Branch.

6. The Plans Branch forwards all documents to the MDW Procurement Office.

7. MDW Procurement solicits quotations from appropriate contractors, evaluates the quotations, obtains all reviews/approvals, and awards the purchase order DD Form 1155 (Order for Supplies or Services/Request for Quotations). Copies of the contract are sent the FMB, Contracting Office Representative (COR) in the Quality Assurance Branch, and the District F&A Branch.

8. The contractor performs the required work and submits an invoice to: (a) The District F&A Branch, (b) A copy to the COR.

9. The Quality Assurance Branch inspects and accepts the work, prepares a receiving report on the invoice or notes acceptance on DD Form 1155, and forwards it to the FMB.

10. The FMB forwards a copy for payment to the District along with: (a) A copy to the MDW Procurement Office, (b) Sends the DA Form 4286 to the O&M Division when the project fields are closed.

11. The District F&A Office pays the contractor and distributes copies of the final payment to: (a) The MDW Procurement Branch, (b) FMB to close out files.

12. The contractor receives the payment.

Contractual Actions Greater Than \$10,000 (Non-Stock Fund Supplies/Services)

1. The using agency initiates the request.

2. The O&M Division may initiate the request based on identified need. All requests are reviewed and the following documents prepared:

Project Description
Scope of Work
DA Form 3953 (Purchase Request and Commitment)

3. The FMB reviews the request and certifies the availability of funds on DA Form 3953. Copies are provided to the Baltimore District at the Procurement Office and to the F&A Branch of the Baltimore District.

4. Procurement prepares the solicitation and obtains a legal review if required. Procurement issues the solicitation to appropriate contractors and makes internal distribution.

5. Contractors respond to the solicitation and submit offers to the District Procurement Office.

6. Procurement receives the offers, evaluates the offers and obtains all needed reviews and approvals, awards the contract, and distributes copies of the contract to the FMB, O&M Division, and the appropriated Real Property Maintenance Manager (RPMM).

7. The contractor provides the supplies/services required by the contract and submits an invoice to the Baltimore District F&A Branch, along with a copy to the receiving office.

8. The RPMM receives the supplies/services and prepares a DD Form 250 (Material Inspection and Receiving Report), noting acceptance of the contractor's performance, and sends it to the FMB.

9. The FMB forwards the DD Form 250 to the F&A Branch, for payment.

10. The F&A Branch pays the contractor and distributes copies of the final payment to the District Procurement Office and to the O&M Division to close out files.

11. The contractor receives the payment to complete all contract activities.

Contractual Actions Greater Than \$10,000 (Services)

1. The using agency initiates the work request for services.

2. The O&M Division prepares an estimate and a Statement of Work for a contract and prepares DA Form 3953 (Purchase Request and Commitment). The using agency reviews and approves the package.

3. The FMB certifies the availability of funds.

4. The District Procurement Office prepares the solicitation, obtains legal review, and issues a solicitation to appropriate contractors.

5. The contractors prepare their offers and submit them to the Baltimore Procurement Office.

6. The District Procurement Office evaluates the offers, obtains all needed reviews and approvals, awards the contract, and distributes copies to the O&M Division, FMB, the appropriate RPMM, and the District F&A Branch.

7,8. The contractor performs the required services and submits an invoice for payment to the District F&A Branch with a copy furnished to the RPMM.

9. The RPMM inspects the services provided, coordinates with the contractor, (a) Who requests payment of F&A, (b) The RPMM, who authenticates receipt of services and prepares a Receiving Report.

10. The FMB reviews and forwards the Receiving Report to the District F&A Branch for payment.

11. The F&A Branch makes the payment and provides copies for the payment to the District procurement offices and to the FMB for closing out the files.

12. The contractor receives the payment.

Contractual Actions Greater Than \$10,000 But Less Than \$100,000 (Construction), OMA Funded

1. The using activity initiates the request on a DA Form 4283 (Facilities Engineering Work Request).
2. The O&M Division reviews the request and recommends that the work be done by contract.
3. The Programs Branch reviews the request and recommends approval to the Director USAEA,CA. The Director approves the DA Form 4283. The Program Branch initiates a DA Form 4285 (Engineer Design Format) and sends it with the DA Form 4283 to the Plans Branch.
4. The Plans Branch prepares the design and cost estimate, and prepares a DA Form 2544 (Inter-Army Order for Reimbursable Services) for the using agency. The using agency approves the DA Form 2544 and returns it to the Plans Branch. The Plans Branch prepares a DA Form 3953 (Purchase Request and Commitment) and a DA Form 4286 (Facilities Engineering Contract Data) and forwards them to the FMB. The FMB certifies the availability of funds and returns the forms to the Plans Branch.
5. The Plans Branch forwards the documents to the District Procurement Office.
6. The Procurement Office obtains all needed reviews, selects bids/proposals, receives bids/proposals, obtains all needed reviews, awards the contract issues a Notice to Proceed to the contractors, and distributes copies of the contracts to the FMB for USAEA,CA distribution to the COR and to the District F&A Branch.
7. The contractor receives the Notice to Proceed, performs the work, and submits an invoice to the District F&A Branch with a copy to the COR.
8. The Quality Assurance Branch inspects the work, and upon completion, certifies the invoice as a Receiving Report accepting the work. The Branch also prepares a DA Form 4286 and forwards it to the FMB.
9. The FMB forwards the invoice to District Procurement and the DA Form 4286 to the O&M Division.
10. The District F&A Branch pays the contractor and distributes copies of the payment to the District Procurement Office and to the FMB to close out files.

APPENDIX D:

PART II: USAEA,CA EXAMPLE PROCUREMENT INSTRUCTIONS*

PROCUREMENT DIVISION
U.S. ARMY CORPS OF ENGINEERS
BALTIMORE DISTRICT

INTERNAL PROCUREMENT
MANAGEMENT INSTRUCTIONS

IPMI 81-3
27 Nov 84

EACA SUPPORT NON-PERSONAL SERVICES CONTRACTS

1. PURPOSE: To set forth step-by-step instructions on processing Non-Personal Service requirements in support of the U.S. Army Engineer Activity, Capital Area (EACA).
2. APPLICABILITY: This instruction is applicable to all personnel of the EACA Procurement Support Branch. These instructions are not applicable to 8(a) contracts.
3. INSTRUCTIONS: All service requirements received for EACA in excess of \$25,000 shall be processed within the EACA Procurement Support Branch following the steps set forth below. Requirements for \$25,000 or less are handled by the EACA Procurement Support Branch, Services Section, Cameron Station, VA, *or the Belvoir Section.*
 - a. Receive funded Purchase Request (DA Form 3953) with drawings and specifications (if required).
 - b. Prepare Procurement Plan in accordance with SOP 714-12, 19 January 1983 and, if negotiated prepare acquisition plan in accordance with DR 715-1-2.
 - c. Obtain applicable Services Contract Act Wage Determination from District Counsel, Labor Relations Office. (Re: FAR 22.1008-1)
 - d. Prepare DA Form 1877 (Data on Proposed Procurement) (Re: AFARS 19.202-91).
 - e. Prepare synopsis of proposed procurement for publication in the Commerce Business Daily. (Re: DOD FAR Suppl 5.207)
 - f. Prepare list of Bidders/Offerors.
 - g. Prepare Determination and Findings (D&F) if required (Re: FAR 15.3) for Negotiated Procurement.
 - h. Assign EACA IFB/RFP number to solicitation and establish bid opening/closing date and time.
 - i. Assemble Solicitation package using SF 33 (Solicitation Offer & Award) following procedures outlined in FAR 14.201-1 for (Adv) or FAR 15.406-1 for (Neg).
 - j. Forward Solicitation package to Office of Counsel for legal review. Upon completion, Office of Counsel will then forward solicitation to Procurement Analyst, Office of the Chief, Procurement Division for review.

This IPMI supersedes IPMI 81-3, 1 March 1981

* This is for services (nonpersonal) - NOT construction. Could be adopted for construction with changes.

k. Prepare Reproduction Request to OAS Printing Plant for reproduction of solicitation and drawings (if any), with instructions to forward to EACA Procurement Support Branch for mailing.

l. Mail solicitation package and drawings (if any) to bidders/offerors on list previously prepared.

m. Amendments (if any) will be prepared by the EACA Procurement Support Branch. A reproduction request shall be prepared to have the amendments reproduced with instructions to forward amendments to EACA Procurement Support Branch for mailing. Amendments shall be sent to all bidders/offerors and in-house personnel who received solicitation package.

n. Bid Openings shall be held in the Federal Office Building, 31 Hopkins Plaza Baltimore, MD 21201. EACA Procurement Support Branch Bid Opening Officer will open all bids.

o. Evaluation of bids/offers shall include checking mathematics and contractor's prices against funding document to assure sufficient funds are available. Additional funds shall be requested if necessary.

p. Prepare Abstract of Bids (SF 1409).

q. Send three low bids/offers with copy of abstract to Office of Counsel for legal review using NABFL-741.

r. Obtain award recommendations from Office of Counsel and Operations and Maintenance Division, EACA.

s. Prepare Board of Awards if proposed award is over \$100,000 (Negotiated).

t. Perform Pre-Award Survey (Re: FAR 9.106). Use NADB Form 1170 to record results of survey.

u. Assign contract number.

v. Award contract to successful bidder/offeror and prepare contract documents to include:

- (1) Award Letter
- (2) Solicitation, Offer and Award SF-33 or Award/Contract SF-26
- (3) Labor Posters, OFCCP-1420 (October 1976) and WH Publication 1313, (January 1978)
- (4) Insurance letter
- (5) Letters to Unsuccessful Bidders/Offerors

w. Forward original and one (1) copy of award letter with contract documents to Contracting Officer for signature.

x. After signature of Contracting Officer forward one (1) copy of contract documents with original signature to contractor for retention. Distribute contract and award letter as indicated in Encl. 1. Assemble contract file.

y. Contract administration shall be accomplished by the Services Section. Therefore, all necessary contract documents shall be distributed to the Services Section within three (3) days of contract award date.

1 Encl.
as


E. J. DOW
Chief, Procurement Division

IMPI 31-3
27 November 1984

ENCLOSURE I

DISTRIBUTION OF NOTICE OF
AWARD AND CONTRACT

1. Contract file (original of contract and copy of award letter)
2. Operations and Maintenance Division, EACA. (duplicate)
3. COR is the RPMM.
4. Office of Counsel, Baltimore (award letter only)
5. Labor Relations, Baltimore (award letter and contract)
6. Real Property Maintenance Manager at applicable site
7. Budget Branch, EACA, Ft. McNair
8. Finance and Accounting, Baltimore
9. EACA Procurement Support Branch, Services Section (contract, award letter, Record of Negotiations, insurance certificate, and all applicable correspondence)

APPENDIX D:

PART III: EXAMPLE PROCUREMENT FORMS

<input type="checkbox"/> CHECKED BOX APPLIES		<input type="checkbox"/> ORDER FOR SUPPLIES OR SERVICES		<input type="checkbox"/> REQUEST FOR QUOTATIONS NO. RETURN COPY(IES) OF THIS QUOTE BY (THIS IS NOT AN ORDER. See DD Form 1155r)		PAGE 1 OF	
1. CONTRACT/PURCH ORDER NO.		2. DELIVERY ORDER NO.		3. DATE OF ORDER		4. REQUISITION/PURCH REQUEST NO.	
8. ISSUED BY: CODE		7. ADMINISTERED BY: (If other than 6) CODE		8. DELIVERY FOB <input type="checkbox"/> DEST <input type="checkbox"/> OTHER (See Schedule if other)			
9. CONTRACTOR/QUOTER CODE		FACILITY CODE		10. DELIVER TO FOB POINT BY:		11. CHECK IF BUSINESS IS <input type="checkbox"/> SMALL <input type="checkbox"/> SMALL DISADVANTAGED <input type="checkbox"/> WOMEN-OWNED	
NAME AND ADDRESS				12. DISCOUNT TERMS			
				13. MAIL INVOICES TO:			
14. SHIP TO: CODE		15. PAYMENT WILL BE MADE BY: CODE				MARK ALL PACKAGES AND PAPERS WITH CONTRACT OR ORDER NUMBER	
16. DELIVERY		This delivery order is subject to instructions contained on this side of form only and is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract.					
PURCHASE		Reference your _____ furnish the following on terms specified herein, including, for U.S. purchases, General Provisions of Purchase Order on DD Form 1155r (EXCEPT CLAUSE NO. 12 APPLIES ONLY IF THIS BOX <input type="checkbox"/> IS CHECKED, AND NO. 14 IF THIS BOX <input type="checkbox"/> IS CHECKED), special provisions _____; and delivery as indicated. This purchase is negotiated under authority of 10 USC 2304(a)(3) or as specified in the schedule if within U.S., its possessions or Puerto Rico; if otherwise under 2304(a)(6). <input type="checkbox"/> If checked, Additional General Provisions apply; Supplier shall sign "Acceptance" on DD Form 1155r and return _____ copies.					
17. ACCOUNTING AND APPROPRIATION DATA/LOCAL USE							
18. ITEM NO.	19. SCHEDULE OF SUPPLIES/SERVICES			20. QUANTITY ORDERED/ACCEPTED *	21. UNIT	22. UNIT PRICE	23. AMOUNT
* If quantity accepted by the Government is same as quantity ordered, indicate by ✓ mark. If different, enter actual quantity accepted below quantity ordered and encircle.				24. UNITED STATES OF AMERICA		25. TOTAL	
26. QUANTITY IN COLUMN 20 HAS BEEN: <input type="checkbox"/> INSPECTED <input type="checkbox"/> RECEIVED <input type="checkbox"/> ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED				27. SHIP. NO.		28. D.O. VOUCHER NO.	
DATE _____ SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE _____				<input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL		29. DIFFERENCES	
30. I certify this account is correct and proper for payment.				31. PAYMENT <input type="checkbox"/> COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL		32. PAID BY	
DATE _____ SIGNATURE AND TITLE OF CERTIFYING OFFICER _____						33. AMOUNT VERIFIED CORRECT FOR	
37. RECEIVED AT		38. RECEIVED BY		39. DATE RECEIVED		34. CHECK NUMBER	
						35. BILL OF LADING NO.	
				40. TOTAL CONTAINERS		41. S/R ACCOUNT NUMBER	
						42. S/R VOUCHER NO.	

DD FORM 1155

PREVIOUS EDITION WILL BE USED UNTIL EXHAUSTED.

1

REQUEST FOR QUOTATIONS (THIS IS NOT AN ORDER)		The Notice of Small Business-Small Purchase Set Aside on the reverse of this form 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. NOT APPLICABLE		PAGE OF PAGES	
1. REQUEST NO.		2. DATE ISSUED		3. ACQUISITION/PURCHASE REQUEST NO.	
4. CERT FOR NAT DEF UNDER 805A REG 2 AND/OR DMS REG 1		5. DELIVER BY /Date/			
6. ISSUED BY		7. DELIVERY			
8. FOR INFORMATION CALL: (Name and telephone no.): No collect calls		<input type="checkbox"/> FOB DESTINATION <input type="checkbox"/> OTHER (See Schedule) 9. DESTINATION (Consignee and address, including ZIP Code)			
10. TO NAME AND ADDRESS, INCLUDING ZIP CODE					
11. PLEASE FURNISH QUOTATIONS TO THE ISSUING OFFICE ON OR BEFORE CLOSE OF BUSINESS /Date/		12. BUSINESS CLASSIFICATION (Check appropriate boxes):			
		<input type="checkbox"/> SMALL <input type="checkbox"/> OTHER THAN SMALL <input type="checkbox"/> DISADVANTAGED <input type="checkbox"/> WOMEN-OWNED			
IMPORTANT: This is a request for information and quotations furnished are not offers. If you are unable to quote, please so indicate on this form and return it. This request does not commit the Government to pay any costs incurred in the preparation of the submission of this quotation or to contract for supplies or services. Supplies are of domestic origin unless otherwise indicated by Quoter. Any representations and/or certifications attached to this Request for Quotations must be completed by the Quoter.					
12. SCHEDULE (Include applicable Federal, State and local laws)					
ITEM NO. (a)	SUPPLIES/SERVICES (b)	QUANTITY (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)
13. DISCOUNT FOR PROMPT PAYMENT		14. CALENDAR DAYS	15. CALENDAR DAYS	16. CALENDAR DAYS	17. CALENDAR DAYS
		%	%	%	%
NOTE: Reverse must also be completed by the Quoter.					
18. NAME AND ADDRESS OF QUOTER (Street, city, county, State and ZIP Code)			19. SIGNATURE OF PERSON AUTHORIZED TO SIGN QUOTATION		20. DATE OF QUOTATION
			21. NAME AND TITLE OF SIGNER (Type or print)		22. TELEPHONE NO. (Include area code)

NSN 7540-01-152-0000
 PREVIOUS EDITION NOT USABLE

10-112

STANDARD FORM 10 (REV 10-82)
 Prescribed by GSA
 FAR (48 CFR) 53.215-1(c)

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

AMENDMENT/MODIFICATION NO. _____ EFFECTIVE DATE _____ RESOLUTION PURCHASE REQ NO. _____ PROJECT NO. _____
 ISSUED BY _____ CODE _____ ADMINISTERED BY (If other than Item 8) _____ CODE _____

8 NAME AND ADDRESS OF CONTRACTOR (No street county State and ZIP Code)

9A AMENDMENT OF SOLICITATION NO.

9B DATED (SEE ITEM 11)

10A MODIFICATION OF CONTRACT ORDER NO.

10B DATED (SEE ITEM 13)

CODE

FACILITY CODE

11 THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of offers ☐ is extended. ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12 ACCOUNTING AND APPROPRIATION DATA (If required)

13 THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT ORDER NO. AS DESCRIBED IN ITEM 14

A THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).

C THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D OTHER (Specify type of modification and authority)

E IMPORTANT Contractor ☐ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14 DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible)

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A NAME AND TITLE OF SIGNER (Type or print)

16A NAME AND TITLE OF CONTRACTING OFFICER (Type or print)

CONTRACTOR/OFFEROR

15C DATE SIGNED

16B UNITED STATES OF AMERICA

16C DATE SIGNED

(Signature of person authorized to sign)

BY

(Signature of Contracting Officer)

NSN 7540-01-152-8070
PREVIOUS EDITION UNUSABLE

10-105

STANDARD FORM 30 (REV. 10-63)
Prescribed by GSA
FAR (48 CFR) 53.243

SOLICITATION, OFFER, AND AWARD <i>(Construction, Alteration, or Repair)</i>		1. SOLICITATION NO. _____	2. TYPE OF SOLICITATION <input type="checkbox"/> ADVERTISED (IFB) <input type="checkbox"/> NEGOTIATED (RFPI)	3. DATE ISSUED _____	4. PAGE 1 OF ____
IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.					
5. CONTRACT NO. _____		6. REQUISITION PURCHASE REQUEST NO. _____		7. PROJECT NO. _____	
8. ISSUED BY _____		9. CODE _____		10. ADDRESS OFFER TO _____	
11. FOR INFORMATION CALL _____		12. NAME _____		13. TELEPHONE NO. (Include area code) (NO COLLECT CALLS) _____	
SOLICITATION					
NOTE: In advertised solicitations "offer" and "offeror" mean "bid" and "bidder".					
14. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS (Title, identifying no., date) _____					

15. The Contractor shall begin performance within _____ calendar days and complete it within _____ calendar days after receipt of _____ <input type="checkbox"/> award, <input type="checkbox"/> notice to proceed. This performance period is <input type="checkbox"/> mandatory, <input type="checkbox"/> negotiable. /See _____	
12A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? (If "YES" indicate within how many calendar days after award in Item 12B.) <input type="checkbox"/> YES <input type="checkbox"/> NO	12B. CALENDAR DAYS _____
13. ADDITIONAL SOLICITATION REQUIREMENTS:	
A. Sealed offers in original and _____ copies to perform the work required are due at the place specified in Item 8 by _____ (hour) local time _____ (date). If this is an advertised solicitation, offers will be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.	
B. An offer guarantee <input type="checkbox"/> is, <input type="checkbox"/> is not required.	
C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.	
D. Offers providing less than _____ calendar days for Government acceptance after the date offers are due will be considered nonresponsive and will be rejected.	

ABBREVIATIONS

AA	Assets Accounting
ACO	Administrative Contracting Officer
ADP	automatic data processing
AE	architect-engineer
AHS	Arlington Hall Station
APC	Account Processing Codes
AR	Army Regulation
ASA(I&L)	Assistant Secretary of the Army (Installation & Logistics)
ASO	Automated Systems Office
BASOPS	Base Operations Support
BDE	Baltimore District, U.S. Army Corps of Engineers
BMAR	Backlogged Maintenance and Repair
BOM	Bill of Materials
BPA	Blanket Purchase Agreement
B&G	Building & Grounds
CA	Commercial Activities
CAMS	Commercial Activities Management System
CENAD	Corps of Engineers North Atlantic Division
COEMIS	Corps of Engineers Management Information System
CONUS	Continental United States
COSMIC	Consolidated Organization Systems for Management Information and Control
COR	contracting officer's representative
CPAF	Cost Plus Award Fee
CS	Cameron Station
DA	Department of the Army
DAAS	Defense Automatic Address System
DCSEH	Deputy Chief of Staff for Engineering and Housing
DEH	Directorate of Engineering and Housing
DLA	Defense Logistics Agency
DMA	Defense Mapping Agency
DOD	Department of Defense
ECD	Engineering and Construction Division
EMIP	Engineer Materials Issue Person
EPCS	EA,CA Procurement Support Section, Cameron Station
EPS	Engineered Performance Standards
EPPD/ECD	Engineer Plans and Programs Division/Engineering and Construction Division
F&A	Finance and Accounting
FAO	Financial Accounting Office
FAR	Federal Acquisition Regulations
FE	Facilities Engineer
FEMS	Facilities Engineering Management System
FESS	Facility Engineer Supply System
FFP/ID	fixed-firm price/indefinite delivery
FMB	Financial Management Branch
FMY	Fort Myer
FOUO	For Official Use Only
FTB	Fort Belvoir
FTE	full-time equivalent
FTP	full-time permanent

FY	fiscal year
GFE	Government-furnished equipment
GSA	General Services Administration
HMD	Housing Management Division
HQ	headquarters
HQDA	Headquarters, Department of the Army
HRO	Housing Referral Office
HSB	Hospital Support Branch
HSC	Health Services Command
IAORS	Inter-Army Order for Reimbursable Services
IFS	Integrated Facilities System
IICAS	IFS/Interface/COEMIS Automated System
IJO	Individual Job Orders
IMA	Information Mission Area
IMO	Information Management Office
INSCOM	Intelligence, Security, and Communications Command
IPG	Implementation Planning Group
ISE	Installation Staff Engineer
ISP	Information Systems Plan
ISSA	Inter/Intra-Service Support Agreement
JOR	Job Order Request
L&E	labor and equipment
MACOM	Major Command
MA,MP&AB	Management Analysis, Manpower and Automations Branch
MCA	Military Construction Army
MCN	Fort McNair
MDW	Military District of Washington
MESB	Management Engineering and Systems Branch
MOU	memorandum of understanding
M&R	maintenance and repair
NAB	North Atlantic, Baltimore District
NAC	North Atlantic, USAEA,CA
NAD	North Atlantic Division
NCR	National Capital Region
OCE	Office of the Chief of Engineers
O&M	operations and maintenance
OMA	Operations Maintenance, Army
OMB	Office of Management and Budget
OMD	operations and maintenance division
OSHA	Occupational Safety and Health Administration
P&C	procurement and contracting
PM	preventive maintenance
PR&C	Purchase Request and Commitment
PWS	Performance Work Statement
QA	quality assurance
QRIP	Quick Return on Investment Program
RCO	Resident Contracting Office
RFQ	request for quote
RJO	Recurring Job Order
RMD	Resources Management Division
RPMA	Real Property Maintenance Activities
RPM	Real Property Maintenance Manager
RPMO	Real Property Maintenance Office

SAG	Study Advisory Group
SAILS	Standard Army Intermediate Level Supply Subsystem
SBA	Small Business Administration
SCM	Steering Committee Meeting
SC	Steering Committee
SE	Staff Engineer
SMD	Supply Management Division
SO	Service Order
SOO	Standing Operations Order
SOP	Standard Operating Procedures
SSL	Shop Stock List
STANFINS	Standard Financial (Accounts) System
TDA	Table of Distribution of Allowances
TFO	transaction for others
TRADOC	U.S. Army Training and Doctrine Command
USAEHSC	U.S. Army Engineering and Housing Support Center
USAESC	U.S. Army Engineer Studies Center
USACE	U.S. Army Corps of Engineers
USAEA,CA	U.S. Army Engineer Activity, Capital Area
USAES	U.S. Army Engineer School
USAMC	U.S. Army Materiel Command
USAMSSA	U.S. Army Management System Support Agency
VHFS	Vint Hill Farm Station
WO	Work Order
WONDERS	A work request management software program now incorporated in COSMIC
WRAMC	Walter Reed Army Medical Center

DISTRIBUTION LIST

Chief of Engineer
ATTN: CEIM-SL (2)
ATTN: CECC-P
ATTN: CECW-O
ATTN: CEMP
ATTN: CEMP-C
ATTN: CEMP-E
ATTN: CERD
ATTN: CERD-L
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ATTN: CERD-M
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